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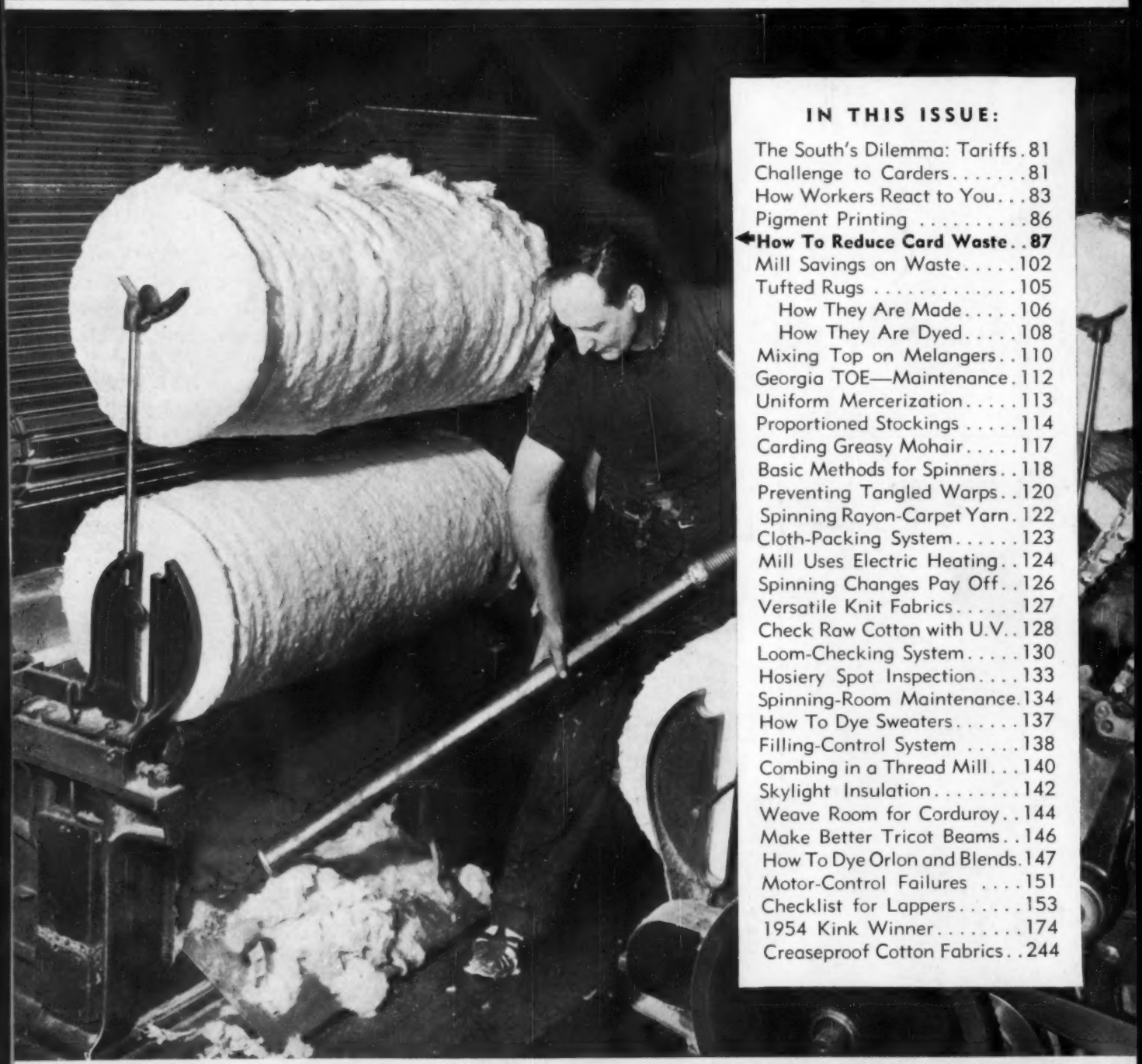
Textile World

MARCH, 1955



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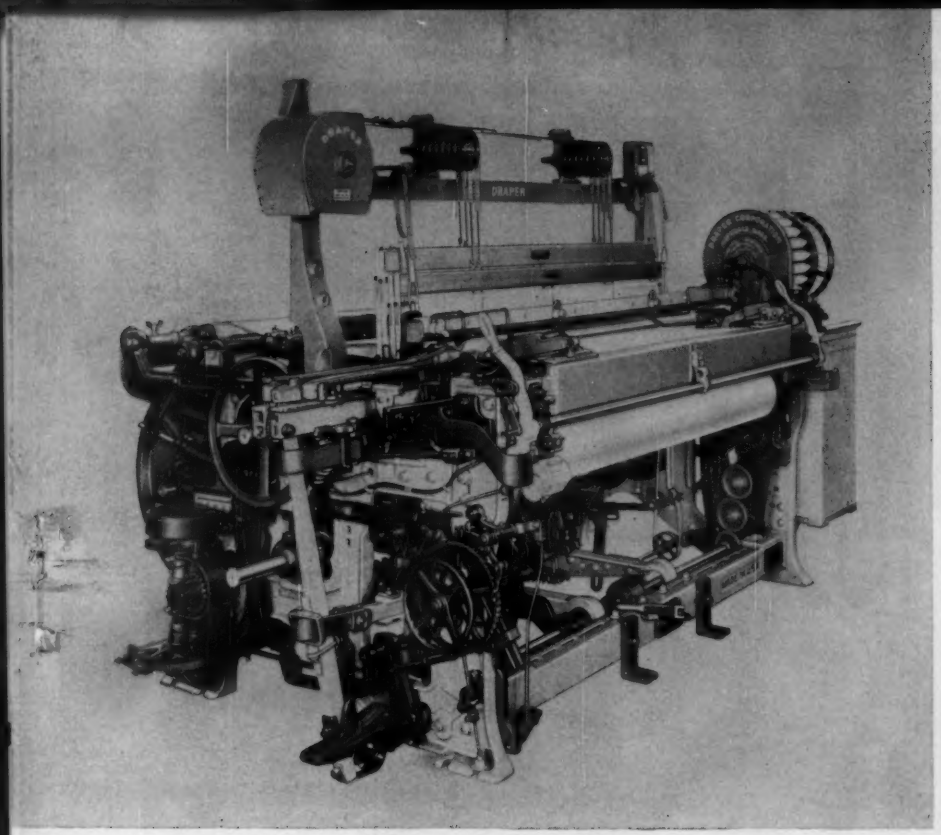

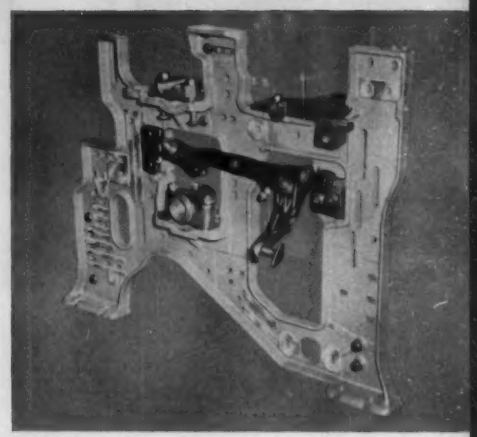

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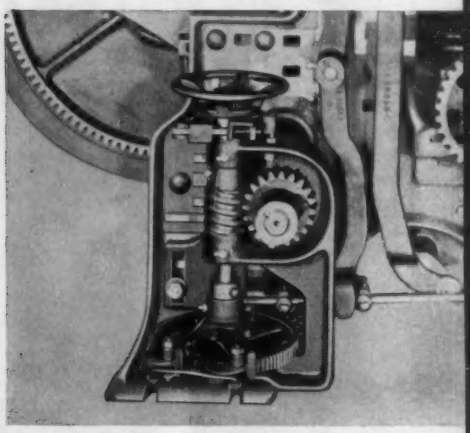

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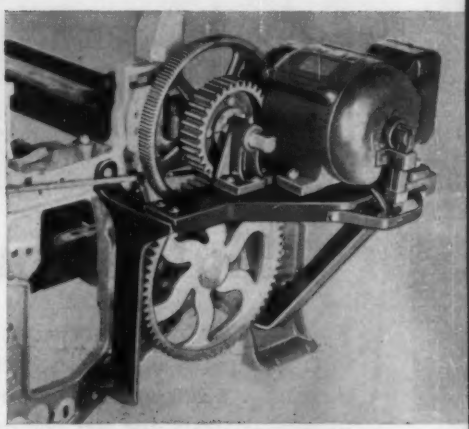

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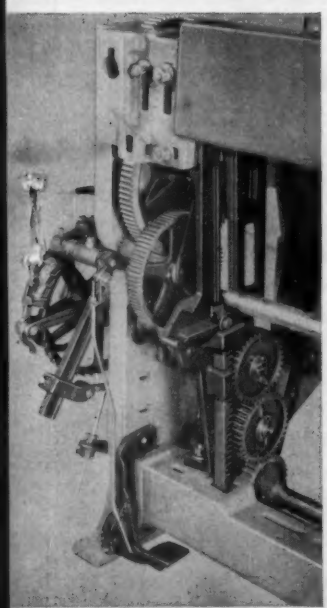

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NEWS of the MONTH

Automatic Control

An experimental embroidery machine controlled by a telegraphic tape was described by Louis Casper of Electrotext Corp. at a recent meeting of the American Institute of Electrical Engineers. According to Mr. Casper, the machine "contributes by specific example to the notion of the automatic factory." At an average speed of 500 stitches per minute, the color, direction, and length of each stitch is under control from any location.

Mr. Casper also commented that "the multiple-colored embroidery machine may find itself, in certain situations, in competition with the loom for producing over-all patterns and even for solid textures of one color."

Minimum Wage Up?

In his State of the Union message, President Eisenhower recommended an increase in the minimum wage from 75 to 90¢; and a bill has been introduced in Congress to that effect. The increase, if passed, will go into effect January 1, 1956. The 90¢ minimum is expected to pass without trouble because there is some support for a higher minimum. (Labor leaders have asked for a $1.25 minimum.)

The increase to 90¢ is favored by Burlington Mills, according to J. Spencer Love, chairman, who says that "such a wage minimum is proper under today's economic conditions."

Mill Developments

▶Tufted upholstery to match tufted carpets [see p. 105] is being produced by the tufting branch of the industry. The upholstery is lighter than the tufted carpet.

▶An inner shield of nylon fabric is being used by The Goodyear Tire & Rubber Co. in tubeless tires. The shield is said to give protection against blowouts.

▶An Italian worsted mill is reported to be feeding a monofilament nylon core in at the front rolls and wrapping worsted yarn around the core. Worsted 40s are being made at 14,000 rpm., and ends down were reported to be almost nonexistent.

▶A process of producing a crepe fabric made of synthetic and natural fibers, by treating the fabric with a sodium-hydroxide swelling solution, can be patented by its Swiss inventor, according to a U. S. court ruling.

▶M. Lowenstein & Sons has developed a cotton-finishing process called Drynu for producing cotton fabrics that need no ironing. No-ironing cotton fabrics have also been developed in England by Neuss, Hesslein and Kempton, Ltd.

Nep Counter

NEPHOLOGER, developed and patented by an Indian cotton mill, illuminates and magnifies samples of cotton 50 times; 200 6x8-in. samples can be studied in about 5 hrs. The image is thrown onto the ground-glass screen. The purpose of the instrument is to study nep formation during processing.

▶Tricot fluting, made in alternate vertical stripes of net and solid fabric, has been patented by W. E. Cusick, Keyport, N. J. Licenses to manufacture the fluting, to be known as Beautiflute, are expected to be granted.

▶West Point Mfg. Co. has developed printed and texture-printed nonwoven fabrics to be used for petticoats and skirt linings. The fabric is washable and wrinkle-resistant. Nylon and rayon fibers are being used.

▶Burlington Mills has developed a wash-and-wear work-clothes fabric made of a 50-50 blend of Acrilan and combed cotton. Features are crease retention and wrinkle resistance. Bur-Mil has also developed a tricot fabric made of a new dull Dacron; 32-gauge machines are being used.

▶Templon Spinning Mills is making high-bulk acrylic yarns for sweaters under the tradenames of Templon and Alana.

▶Chadbourn Hosiery Mills has introduced a stretch full-fashioned stocking called X-90. The stocking is said to be the same as Stocking X with one additional process; and two X-90 stockings are being guaranteed to give three months wear. Price: two pairs for $5.

▶A felt using Dynel combined with a resin will be developed for raincoat and tent fabrics, according to a prediction by Lawrence H. Hansel of The Felters Co. The fabric will be waterproof but will breathe.

▶Fleece coating woven of 100% Dynel has been developed by Draper Bros. Co. The fleece, called Dynalure, is made of spun fine-denier, mechanically crimped fiber.

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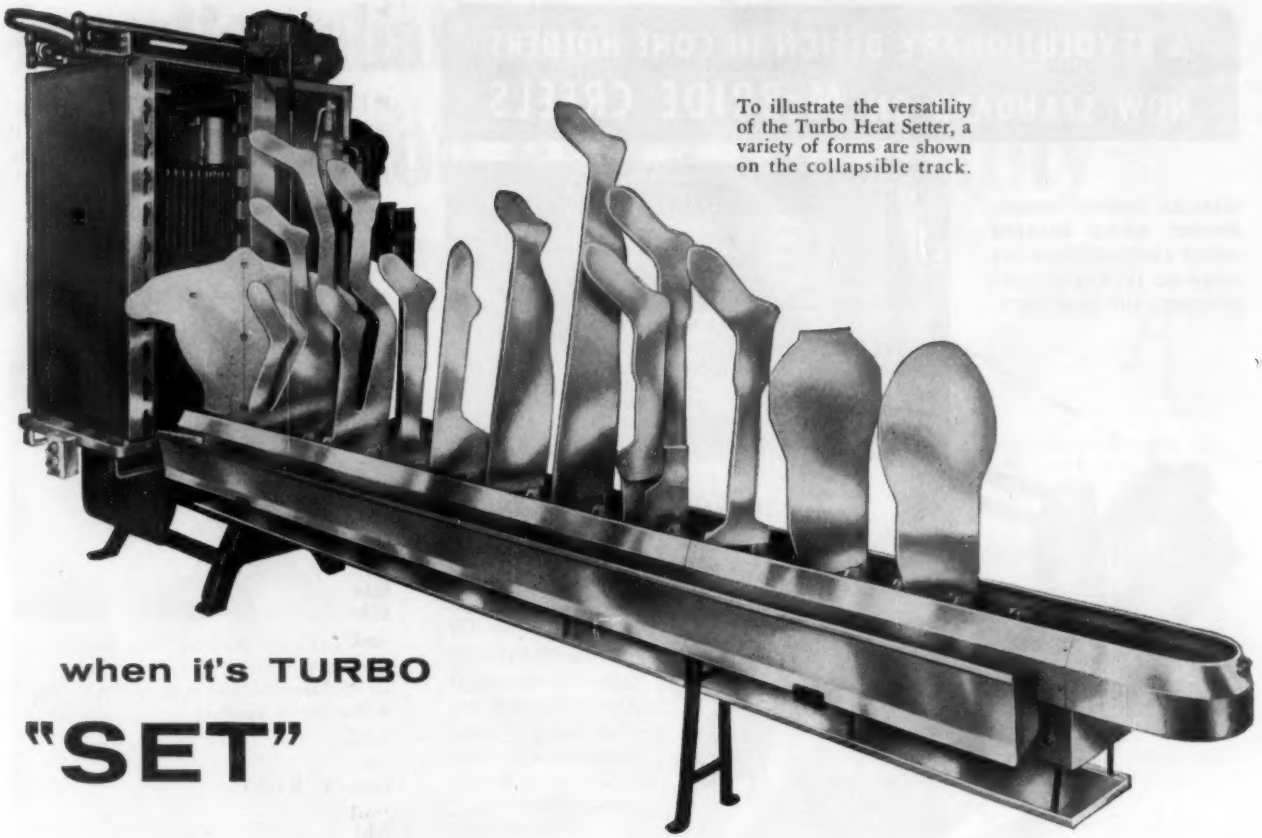

To illustrate the versatility of the Turbo Heat Setter, a variety of forms are shown on the collapsible track.

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FEATHER-TOUCH THUMB RELEASE allows instant change of packages without tools. Just snap it on, snap it off. Sturdy swing-out arm gives easy access for loading. Rotating spindle facilitates tying of transfer tails.

Like all of the McBride BIG 3 CONTROLS FOR QUALITY, the Quik-Change cone holder is standard equipment on all McBride creels.

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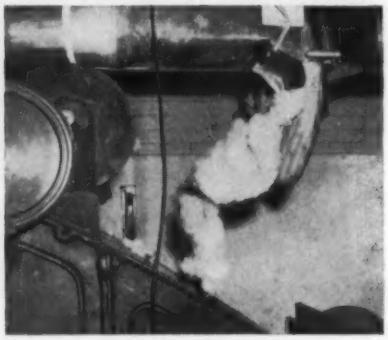
► Riegel Textile Corp. has announced a new fabric, Noil-Suede, a cotton flannel with a woven-in noil effect.

► Fire hose woven with Dacron filler cords in the inner and outer jackets has been developed by Hamilton Rubber Mfg. Corp.

Cotton Feeder



NEW DELIVERY BOX for cotton has been developed at the British Cotton Industry Research Assn. This unit is the prototype model at the Shirley Institute.

News Briefs

► Fibro, a high-tenacity rayon for fine yarn numbers and blending with extra-long-staple cotton, has been developed by Courtaulds, Ltd.

► A new saran monofilament has been developed by Dow Chemical Co. The new formulation gives improved light stability, controlled shrinkage, and reduction of static. Pastels are possible because of the lighter base color.

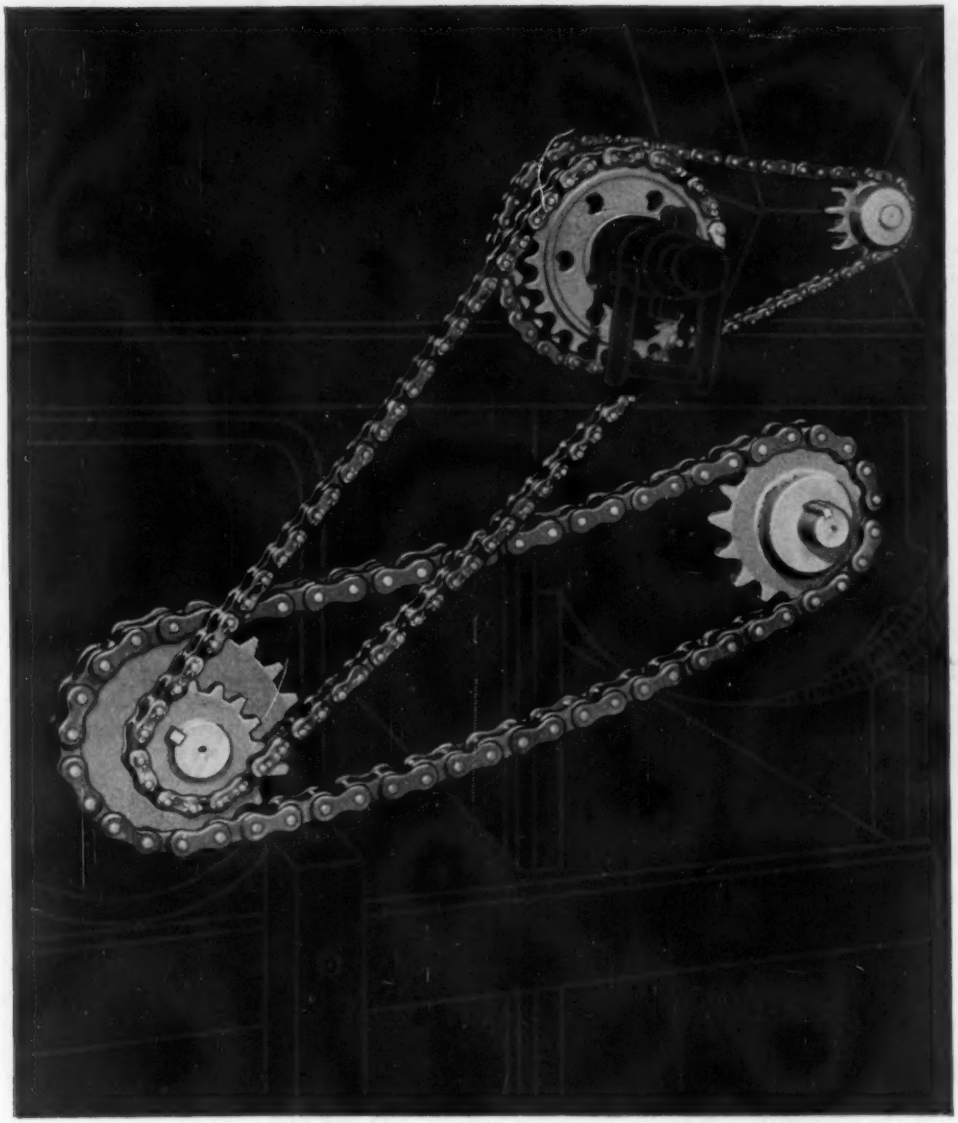
► "Both the quantity and quality of application research in finishing plants should be raised," says a bulletin issued by H. W. Butterworth & Sons Co. Few dyers and finishers spend more than 0.1 to 0.5% of gross sales on research and process control, whereas dye and chemical companies spend 1 to 2.5% (not including their own process control). The bulletin called for more cooperation between finishers, machinery builders, dye and chemical manufacturers, and textile schools.

► The second mill tour for cotton producers will be held this month. It is sponsored by American Cotton Manufacturers Institute and will be held in the Charlotte, N. C., area.

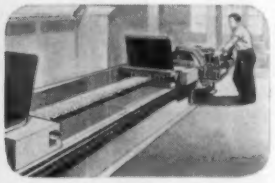
► A campaign for funds to rebuild the original Slater Cotton Mill, the first successful mill in America, has started in Pawtucket, R. I. A goal of $125,000 has been set. A working Eighteenth Century spinning mill will be rebuilt.

CONTINUED ON PAGE 8

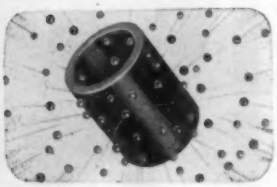
In roller chain . . . EXTRAS* like these give you extra reliability



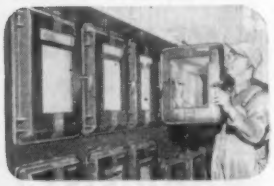
LOCK-TYPE BUSHINGS (applied on a range of sizes) end a cause of stiff chain.



PRE-STRESSING of multiple width chain provides uniform load distribution.



SHOT-PEENED ROLLERS have greater fatigue life, added ability to withstand impact.



CLOSER HEAT-TREAT CONTROL — coupled with rigid testing insures uniformity.

*And you pay no premium for these LINK-BELT extras

BIG reason why Link-Belt Precision Steel Roller Chain is first choice for so many tough jobs is that it has *extra reliability built-in.* For example, pre-stressing smooths out any irregularities of multiple width chain *in advance.* And it's just one of many *extras* you get as *standard* from Link-Belt. Check the three others shown here. Then call the Link-Belt office or authorized stock carrying distributor near you for facts on Link-Belt's complete range of roller chain and sprockets. Data Book 2457 gives full information on single and multiple widths, in ¼″ to 3″ pitch, 1″ to 3″ double pitch. Ask for your copy.

LINK-BELT

ROLLER CHAIN & SPROCKETS

12,702

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Austria, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

COLOR THAT SELLS

FROM DEPENDABLE *KWG* PADDLE WHEEL MACHINES

NEW AUTOMATIC OPENING COVER—COUNTER BALANCED FOR EASY HANDLING—THE NEW 'STANDARD' FOR THE DYEING INDUSTRY.

FOR QUALITY DYEING OF

SWEATERS
HOSE
TAPES
GARMENTS

Perfection in dyeing—for natural and the new synthetic fibers—is yours with heavy gauge, stainless steel KWG Paddle Wheel machines. Their construction and performance give you the penetration and evenness of color—the permanence of tone—for that extra measure of sales appeal—without concern for costly high-temperature, high-pressure methods. Machine sizes range from 10 to 500 pound capacity.

You can point the way to extra sales . . . extra profits . . . today by writing Klauder Weldon Giles. A KWG representative will be glad to survey your needs. If necessary, he'll design special equipment to your specifications. There's no obligation.

Klauder Weldon Giles MACHINE COMPANY
ADAMS AVENUE & LEIPER STREET
PHILADELPHIA 24, PENNSYLVANIA

► Dr. John H. Dillon, director of Textile Research Institute, Princeton, N. J., will be awarded the Harold DeWitt Smith Memorial Medal at the March 17 meeting of Committee D-13 of the American Society for Testing Materials. The award is for outstanding research on textile fibers.

► Beaunit Mills has leased a tricot knitting plant in Puerto Rico. The plant was formerly leased by Textron. Beaunit has tentative plans to build a fiber plant in Puerto Rico, which would encourage other textile producers to locate a plant there. Garment factories to absorb the tricot production are being sought by the Puerto Rican government.

ROUND TABLE

Letters From Readers

What's on your mind?

We welcome your comments. Whether you agree or disagree, with us or anybody else, we will be glad to have you air your views.

Unless you ask us not to, we will use your name and company connection when your letter is printed. If you prefer to have your opinions appear unsigned, we will respect your confidence by using only a set of initials.

Write to Editor, Round Table, TEXTILE WORLD, 330 W. 42nd St., New York 36, N. Y.

CONVERTING FROM C. TO F.

Dear Editor:

On page 16 of your 1954-55 Fact File issue, under the Centigrade-Fahrenheit Temperature Conversion Table, I have noticed that one of the formulas listed will not give the correct answer if applied exactly as written. This formula is: $F° = 9/5 (C° + 32°)$.

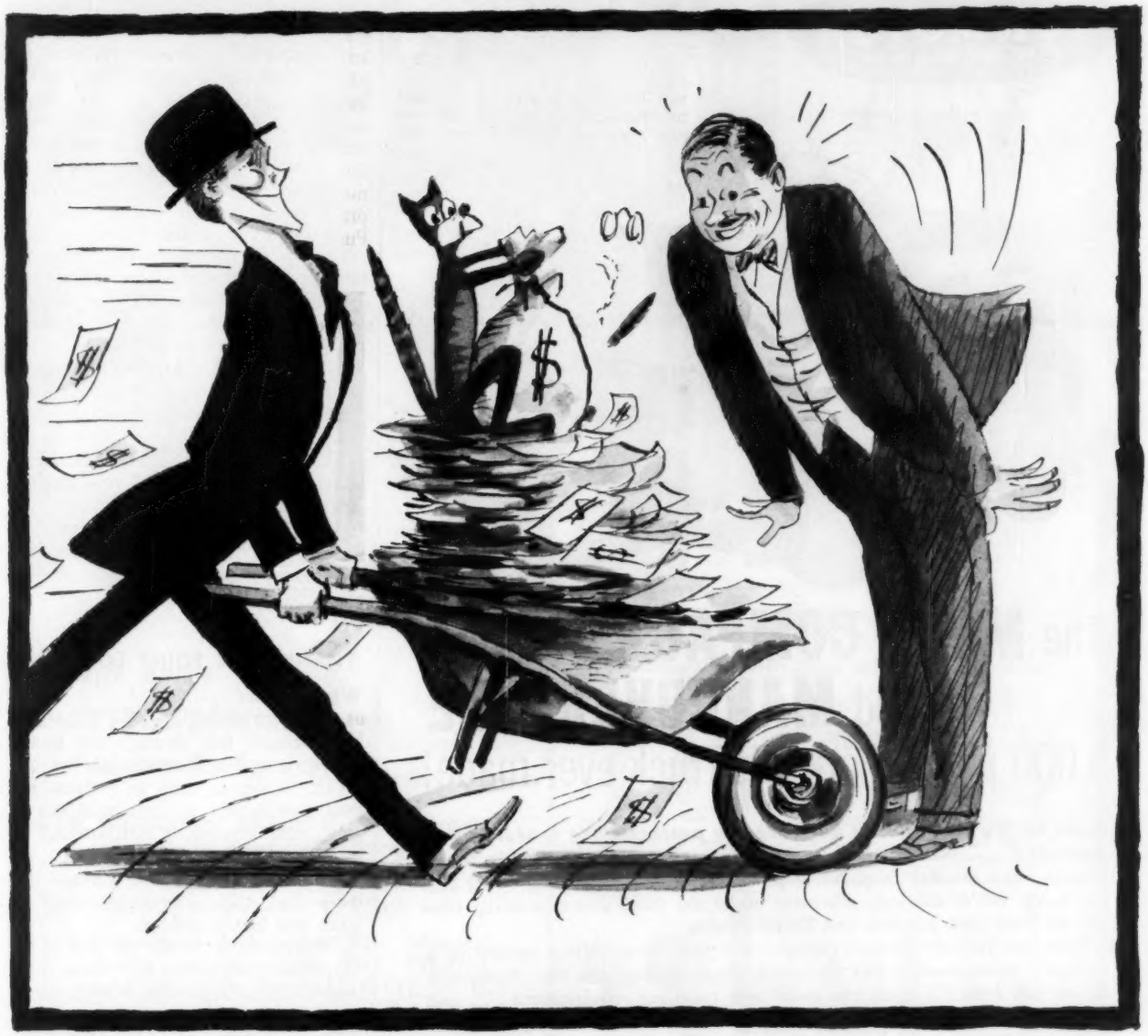
Shouldn't the formula read $F° = 9/5\ C° + 32°$?

SANFORD A. DUNSON
Georgia Rug Mill
Summerville, Ga.

[*Yes. Sorry for any inconvenience that has resulted.*—EDITOR]

CONTINUED ON PAGE 10

"Now, do you believe our ads about savings?" said Mr. Friendly



Note: This is the umpty-ninth ad about American Mutual's special money-saving service, which should be enough umpty-ump cases to convince anyone!

The Company: Alice Manufacturing Company of Easley, South Carolina, famous for unfinished cotton print cloth and happy employees.

The Record: In 6 short years we helped them save $45,633 through reduced premiums . . . plus another $17,922 through dividends.

Total Savings: $63,555. (Exclamation point!)

MORAL: Believe us . . . our service has reduced accidents and premiums to far below average for all kinds of companies all over the country. For similar cases in the textile industry and other industries, write today to American Mutual Liability Insurance Company, Dept. **TW-1,** 142 Berkeley Street, Boston 16, Mass.

AMERICAN MUTUAL

Service from salaried representatives in 78 offices!
Savings from regular substantial dividends!

© 1955, AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

GROUP ACCIDENT AND HEALTH-HOSPITALIZATION . . . WORKMEN'S COMPENSATION . . . AUTOMOBILE . . . ALL FORMS LIABILITY INSURANCE

The **MOST COMPACT** and **MANEUVERABLE** 5,000 pound Fork Lift Truck ever made!

Here, in the new Model 500, are the performance features you requested . . . NEW compactness and maneuverability previously found only in much smaller units. NEW power to spare for handling up to 2½-ton loads. NEW day-long efficiency under the most severe working conditions from both gasoline and Diesel models.

Here are versatile power, capacity and performance long needed in a compact, maneuverable fork lift truck. Find out how the new Towmotor Model 500 fork lift truck can meet *your* handling requirements . . . and turn *more* of your present handling costs into profit. For complete information, call or write your local Towmotor Representative, or TOWMOTOR CORPORATION, Div. 220, 1226 E. 152nd St., Cleveland 10, Ohio.

TOWMOTOR
THE ONE-MAN-GANG

FORK LIFT TRUCKS and TRACTORS

★ NEW Power and Compactness
★ NEW High In Maneuverability
★ NEW Handling Speed And Efficiency
★ NEW Driver Comfort
★ PLUS *All* Other TOWMOTOR Advantages

Manufactured Only By Towmotor Corporation—The Pioneer Maker Of Fork Lift Trucks

ROUND TABLE

(Continued)

FILLING IDENTIFICATION

Dear Editor:

In the December issue of TEXTILE WORLD, page 152, there is an item in the Kinks and Short-Cuts feature describing cardboard markers used to identify and stop mixed filling in the looms.

This is a problem with which most mills are troubled where several kinds of filling are weaving in the same loom section.

We use a system similar to the one described, except that in place of cardboard tickets taped to the loom, we use a colored sticky tape that is applied to the radius of the hopper stand. The color of the tape corresponds to the tint or colored ticket that is used to identify the filling on the racks. By matching the filling to the colored tape at the loom, we avoid mixed filling.

We thought you might be interested in this variation of yarn identification at the looms.

ERNEST E. MORRIS
Division Superintendent
Pepperell Mfg. Co.
Fall River, Mass.

THANKS FOR POINT FOUR

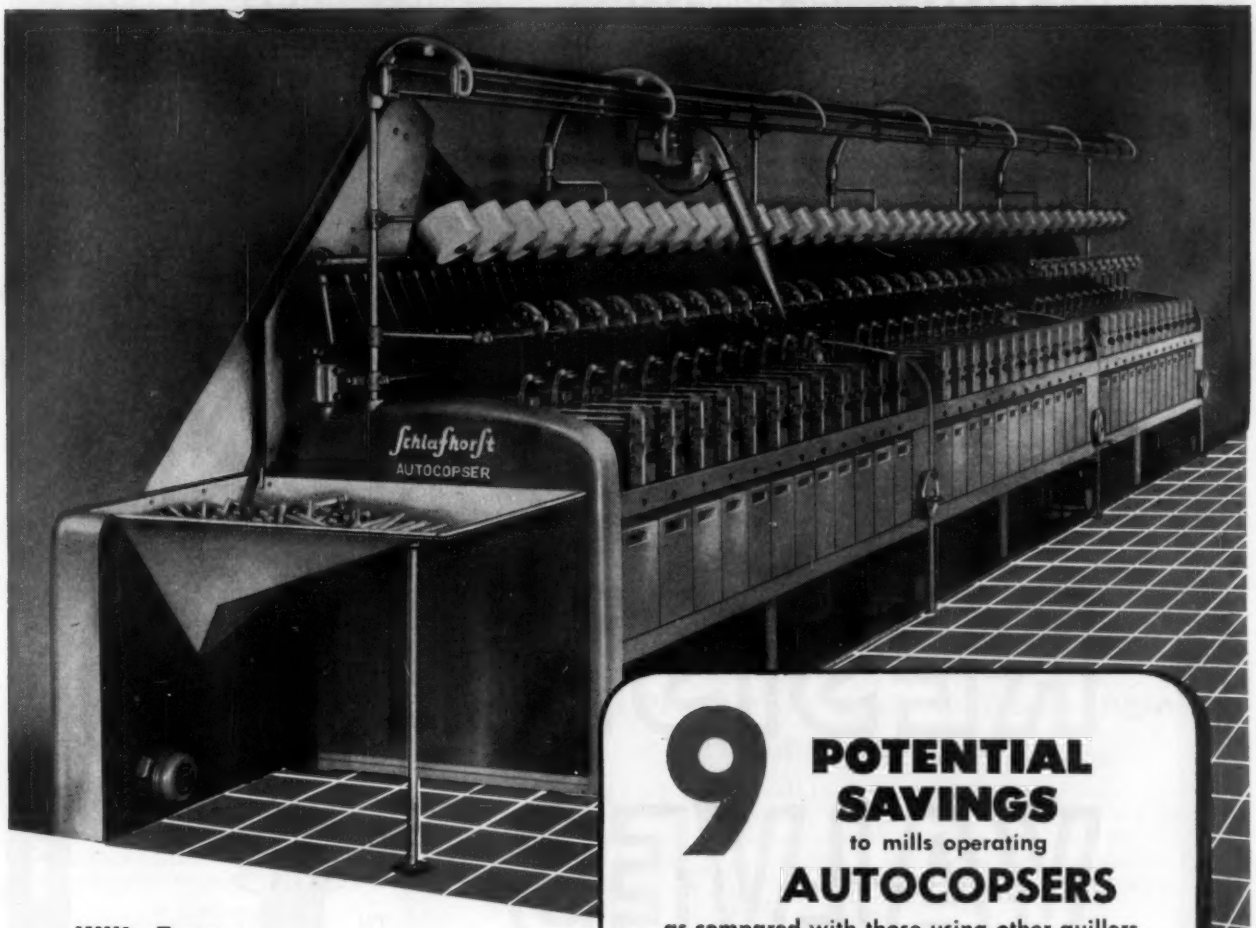
Dear Editor:

Prior to leaving the U. S. after a three-month trip through the textile industry under the auspices of the FOA, I should like to express my heartiest thanks to the members of your staff who were instrumental in planning my trip in the South. . . . Without their kind help I would not have had such interesting visits in mills and textile colleges.

My heartiest thanks go also to all those kind persons in the textile mills and textile colleges who helped me to attain the purpose of my tour. And I extend my gratitude to the U. S. Government and its offices, who granted my participation in the Point-Four Program and laid out my itinerary, and to the Israel Government and my company, who selected me for this assignment.

May I add that I felt very happy here, feeling that I was well up to date with the latest developments in the textile industry through diligently reading your TEXTILE WORLD through the years. . . . This kind of communication overseas is the only way of receiving valuable information.

HANS-W. COHN
ATA Textile Co. Ltd.
Haifa, Israel



With Every AUTOCOPSER Installation You can Be Sure of:

- THOROUGH TRAINING of operating personnel by experienced specialists.
- Manufacturer's ADVISORY SERVICE for maximum performance in YOUR mill.
- Guaranteed Parts Supply from Adequate Stocks maintained by THE TERRELL MACHINE CO. IN CHARLOTTE, N. C.
- Dependable SERVICE and Periodical INSPECTIONS.

9 POTENTIAL SAVINGS

to mills operating

AUTOCOPSERS

as compared with those using other quillers

Schlafhorst

AUTOCOPSER

First Name in Automatic Quillers the World Over.

SOLD AND SERVICED BY THE TERRELL MACHINE COMPANY, INC., 3000 S. BLVD., CHARLOTTE, N. C.

 For more information, write direct or use Reader Service post card.

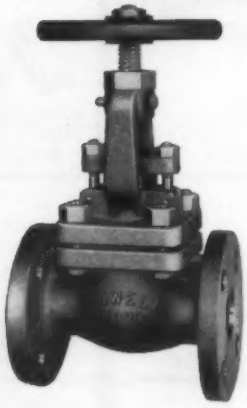
POWELL VALVES . . . THE COMPLETE QUALITY LINE . . . POWELL VALVES

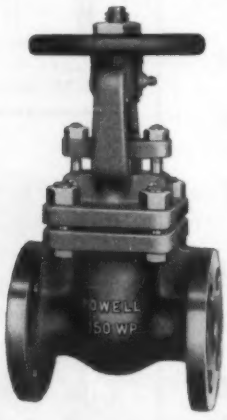
. . . THE COMPLETE QUALITY LINE . . . POWELL VALVES . . . THE COMPLETE QUALITY LINE . . .

FIG. 2342—Flanged End Bolted Cap Swing Check Valve for 150 Pounds W.P.

POWELL CORROSION RESISTANT VALVES

FIG. 2495—Double Disc Flanged End O.S.& Y. Gate Valve for 150 Pounds W.P.





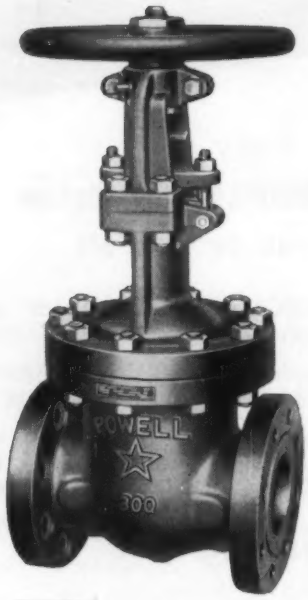


FIG. 2475—Stainless Steel O.S.& Y. Globe Valve for 150 Pounds W.P.

FIG. 3003SS—High Pressure Service Alloy Steel Gate Valve for 300 Pounds W.S.P.

POWELL VALVES . . . THE COMPLETE QUALITY LINE . . . POWELL VALVES

Powell can supply exactly the corrosion resistant valves you need . . . in a WIDE VARIETY of metal and alloys and all designs. You can be certain that every Powell Valve will give you dependable flow control.

Shown above are a few Powell Corrosion Resistant Valves. Investigate these . . . and the *complete* Powell line of quality valves that have a proven record of long, dependable service.

If no distributor is near you, we'll be pleased to tell you about our complete line, and help solve any flow control problem you may have. Write . . .

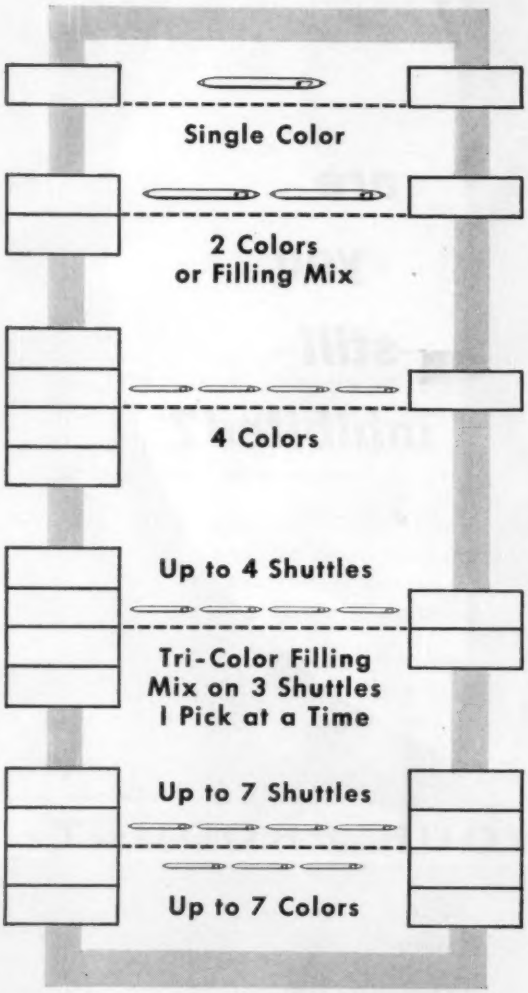
The Wm. Powell Company, Cincinnati 22, Ohio . . . . . 109th year

For more information, write direct or use Reader Service post card.

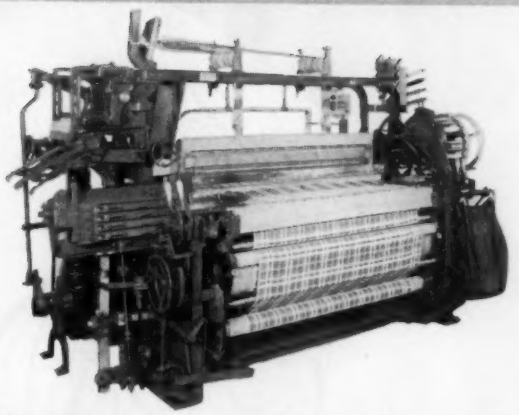
No. 5 in a series explaining

Why C&K's New Multi-Purpose Looms mean More Profit to any mill

Here are C&K's New Conceptions of *CONVERTIBILITY*


Single Color
2 Colors or Filling Mix
4 Colors
Up to 4 Shuttles
Tri-Color Filling Mix on 3 Shuttles 1 Pick at a Time
Up to 7 Shuttles
Up to 7 Colors

***Many of these combinations are now available. Others are on the drawing board.**



In any M-P Loom . . . C&K gives you the Most Protection against the changing whims of fashion

Why be tied to a plain 1 x 1 box loom . . . when the Most Profitable operation is in automatic box loom work? Why limit yourself with a 4 x 4 box loom, when a crepe season calls for an automatic 2 x 1 box loom? And why be saddled with a 2 x 1 box filling mixing loom . . . in a season when high fashion calls for fancy fabrics with up to 4 colors of filling for which the automatic 4 x 1 box loom is a must?

And finally, if the automatic 4 x 2 feature* is needed for Most Perfect blending of filling, this will be available in M-P Looms. Precision-built lays are readily and inexpensively convertible in combinations of 1 x 1, 2 x 1, 4 x 1, 4 x 2, 4 x 4 box*.

These are C&K's new conceptions of convertibility, designed with a "weather eye" out for any sudden and unpredictable market changes. And that's why . . . if you believe in insurance . . . *you'll believe in the M-P Loom.* See C&K today.

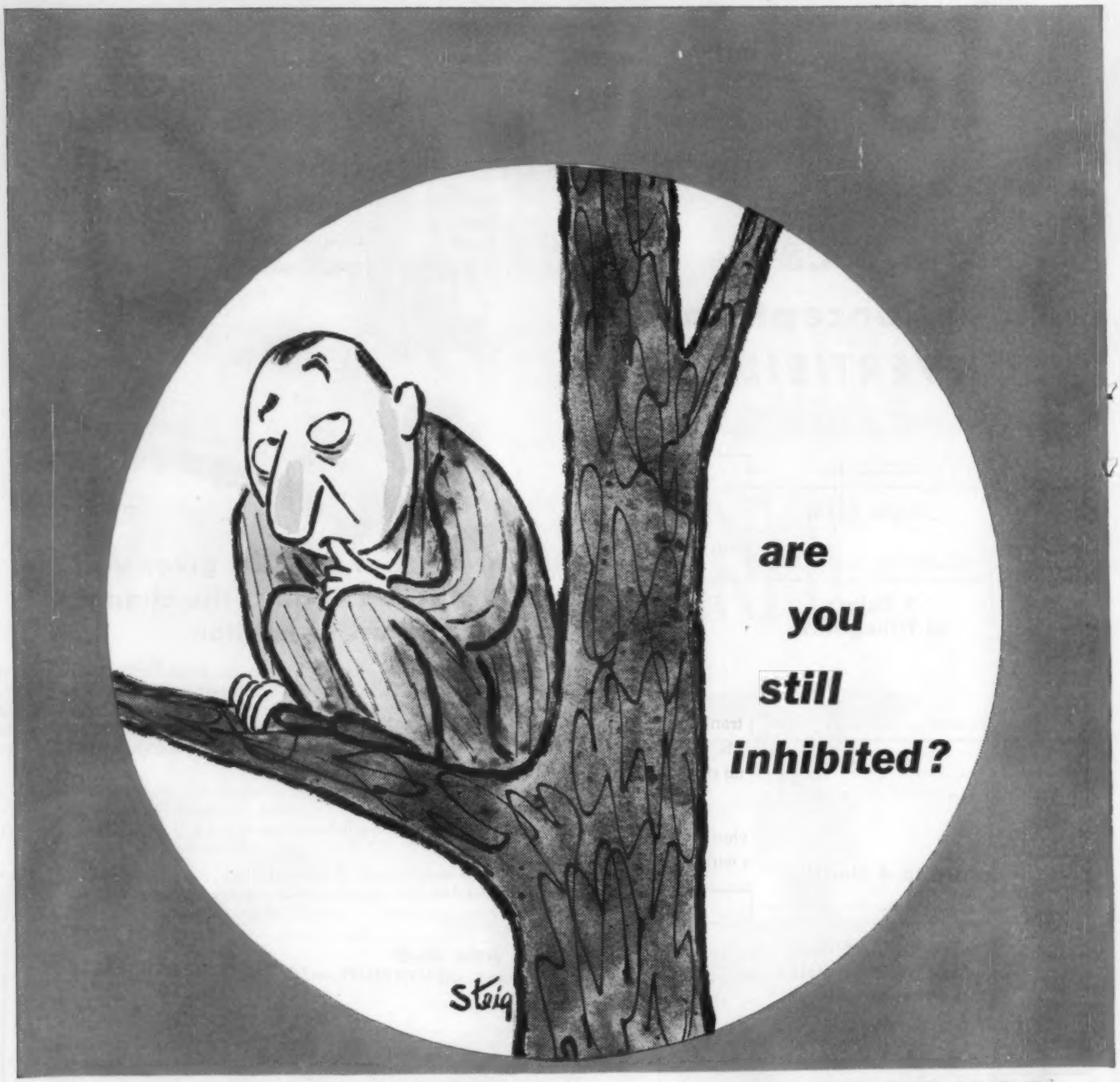
THESE NEW M-P FEATURES CONTRIBUTE→TO THESE PROFIT FACTORS

	Better Quality	Increased Work Assignments	Increased Production (Speed X Efficiency)	Lower Maintenance	Versatility
Rotary Magazine: For single color, or for multiple-color work (up to 4).	✓	✓	✓	✓	✓
Scissors Thread Cutter	✓	✓	✓	✓	✓
Vacuum Filling Control	✓	✓	✓		✓
Cone Picking		✓	✓	✓	
More Rugged Basic Frame: Common to all M-P Looms.		✓	✓	✓	✓
Letoffs: New composite type. Also other standard and special types.	✓	✓		✓	✓
Takeups: All purpose, silk, or lower winding roll.	✓				✓
Lay: Precision-built and convertible — 1x1, 2x1, 4x1, 4x2, and 4x4	✓	✓	✓	✓	✓
Shedding Mechanisms: Knowles Head — 25 Harness, 4/10" Space Knowles Head — 20 Harness, 1/2" Space Dobby — 20 Harness, 15/32" Gauge Undercam Jacquard	✓	✓	✓	✓	✓
Feelers: As required.	✓	✓	✓		✓
Driving & Shipping	✓	✓	✓	✓	

PRECISION, STRENGTH, SIMPLICITY Throughout Every M-P Loom

Crompton & Knowles
LOOM WORKS
WORCESTER 1, MASSACHUSETTS, U. S. A.
Charlotte, N. C. · Philadelphia, Pa. · Allentown, Pa.
Crompton & Knowles Jacquard & Supply Co., Providence, R. I.
Crompton & Knowles of Canada Limited, Montreal, Quebec

For more information, write direct or use Reader Service post card.



WILL PUT NEW LIFE IN YOUR PRODUCT

THE NEW Nylon Staple

THE NEW Nylon Staple by IRC can transform a "taboo" into a "can do". Because it can create entirely new effects, it offers creative millmen the opportunity to think beyond the present barriers on product development and improvement.

With the NEW brighter-than-bright Nylon Staple by IRC you can achieve sheen without shine . . . a quicker, deeper dye with more absorbency. It has a new crimp to give a new effect. You can get new resistance to abrasion . . . better spring-back . . . and new strength with finer yarns.

Best of all, you can work with greater economy and achieve higher quality. You can expect the NEW Nylon Staple by IRC to give you the same cost-cutting uniformity and performance that industry has come to expect of IRC rayon yarns.

. . . BRING NEW PRODUCTS TO LIFE!

- NEW LUSTER • NEW DYEABILITY
- NEW CRIMP • NEW ABRASION CHARACTERISTICS
- NEW RESILIENCY WITH LESS CRUSHABILITY
- NEW STRENGTH . . . AND NEW ECONOMY FOR YOU

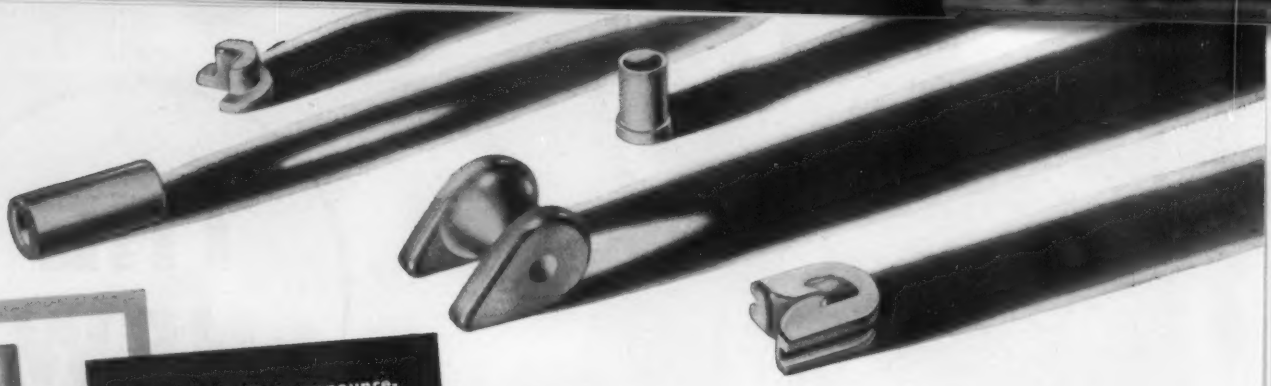
I·R·C

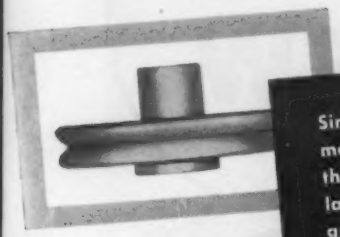
Industrial Rayon Corporation

Cleveland, Ohio

Sales Offices:
500 Fifth Avenue, New York 36, N. Y.
[illegible] Guilford Building, Greensboro, N. C.

 For more information, write direct or use Reader Service post card.





Since the first announcement of these guides more than two years ago, popular demand has been so great that this advertisement is repeated with the addition of three new AlSiMag guides. These guides are thoroughly proved by constant use in several hundred mills.

ALSIMAG® GUIDES for WHITIN-SCHWEITER QUILL WINDERS

These AlSiMag Guides have been thoroughly proved in the winding of synthetic yarns at terrific speeds.

ADVANTAGES:

LONGER LIFE—Many mills report that these AlSiMag guides give 10 to 15 times the wear obtained from their best former guides.

LIGHTER TENSIONS—AlSiMag guides can be supplied in satin or highly polished finish.

MORE UNIFORM TENSIONS—AlSiMag guides are homogeneous and are uniform physically and dimensionally.

LESS GUIDE BREAKAGE—All AlSiMag materials are considerably stronger than ordinary ceramic guide materials. AlSiMag 513 has almost double their mechanical strength.

BETTER QUALITY YARN—Hard, homogeneous AlSiMag has no surface skin to wear through, cause undetected yarn damage. Guide wear is very gradual, simply exposes new surfaces of the same character as the original.

AlSiMag No. GE-20256

AlSiMag No. GS-24909-A

AlSiMag No. GE-28390

AlSiMag No. GU-10713-B

AlSiMag No. GE-16861

AlSiMag No. GS-24244

AlSiMag No. GE-15978

These AlSiMag Guides are available in either satin finish or highly polished finish in any of these AlSiMag materials.

ALSIMAG 192—(Considered standard). A non-conductor of electricity. Hardness of 8 on Mohs' scale. Gives exceptionally long life on most requirements. Ivory color.

ALSIMAG 193—A conductor of electricity, used for dissipating static charges. Metallic gray color. Otherwise it is identical to AlSiMag 192.

ALSIMAG 513—Super hard (9 on Mohs' scale), resistant to cracking, chipping, great mechanical strength. Its cost is justified where excessive wear is experienced or where satin finish must be maintained under severe conditions. Pink color.

TEST SAMPLES ON REQUEST

Try these AlSiMag Guides on your Whitin-Schweiter Quill Winders. You'll find that they are the best and by far the most economical.

53RD YEAR OF CERAMIC LEADERSHIP

AMERICAN LAVA CORPORATION

A Subsidiary of Minnesota Mining and Manufacturing Company

CHATTANOOGA 5, TENNESSEE

SALES ENGINEERS: NORTH AND EAST: Jay S. Gosnell, 671 Broad St., Newark, N. J., Mitchell 2-8159. SOUTHEAST: Joe E. Spearman, American Lava Corporation, Chattanooga 5, Tenn., 5-3411. ALL OTHER AREAS: J. B. Shacklett, American Lava Corporation, Chattanooga 5, Tennessee, 5-3411. CANADIAN REPRESENTATIVE: Ian M. Haldane and Company, Post Office Box 54, London, Ontario, Canada. CONTINENTAL EUROPEAN REPRESENTATIVE: P. C. Huguenin Luzern, Gerbergasse 6, Luzern, Switzerland

After years of experimentation, research and collation, Pfister offers...

The Most Complete, Up-to-Date NAPHTHOL MANUAL

Here is a thorough, authoritative reference for textile dyeing and printing applications of Naphthols. Extensive coverage is given to fastness properties, formulae and research data. This practical, working handbook of more than 110 pages, includes information on 31 Naphthols and all of the most important fast color Salts and Bases. We will be pleased to present a copy of this handsomely bound manual to you, without obligation. Please make your request on your company's letterhead.

Pfister Chemical Works INC.

Box 263, Ridgefield, New Jersey

For more information, write direct or use Reader Service post card.

Under heavy load Gates Vulco Ropes—the V-belts with concave sides—grip pulley grooves more firmly and pull harder.

This large lathe was formerly driven by a flat belt which slipped on heavy cuts, stalled and broke tool bits. Savings on broken tool bits alone offset the cost of the drive the first year ...and production was increased 25%.

Concave sides keep belt costs down!

Industry is saving thousands and thousands of dollars every year by specifying Gates Vulco Ropes—the V-Belts with *concave sides* (U.S. Pat. No. 1813698).

Here's the interesting reason *why* Gates belts save money:

On the bend around the sheave the *precisely engineered* concave sides (Fig. 1) of the Gates belt fill out and become straight (Fig. 1-A). Thus the belt makes uniform contact with the sides of the pulley. That means sure pulling power and *even distribution of wear.* Longer wear, fewer replacements cut belt costs...reduce down time...contribute to profits.

Simple test proves value of concave sides

Bend a straight-sided belt (Fig. 2) and feel the sides *bulge out* around the bend. The bulging sides prevent the belt from fitting evenly in the pulley groove (Fig. 2-A). Uneven contact causes uneven wear...shortens belt life...increases costs.

Keep belt costs *down* by specifying Gates Vulco Rope Drives—the V-Belt with *concave sides.* Belts you need are readily available from nearby distributor stocks. The Gates Rubber Company, Denver, Colorado—*World's Largest Maker of V-Belts.*

Gates Engineering Offices and Distributor Stocks are located in all industrial centers of the United States and Canada, and in 70 other countries throughout the world.

TPA 28-A

GATES VULCO ROPE DRIVES

STANDARD
OF THE
WORLD

3°30′

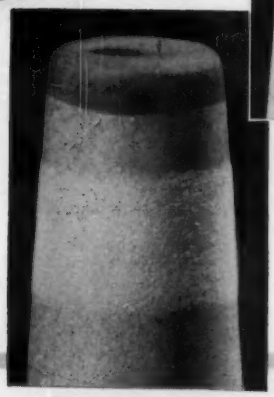
CONES by SONOCO

This cone is designed for winding rayon, nylon and other filament yarns for knitting or creeling. The SONOCO 3°30′ cone is available in solid colored stock, or plain, and colored lacquer tips or printed bands in various colors can be specified for identification.

To prevent slippage in the primary winding and permit free delivery, the 3°30′ may be ordered with either Velvet or Unitex Surface. Standard lengths: 6", 6¾" and 7". Made in light, medium and heavy weights.

A SONOCO sales-engineer would be glad to personally discuss the advantages of your using this superior cone.

ABOVE—Sonoco Velvet Surface



LEFT—Sonoco Unitex Surface

VISIT SONOCO
KNITTING ARTS EXHIBITION—Atlantic City
April 25-29—1955—Spaces 507 and 508

sonoco
SERVES THE WORLD
OF PAPER CARRIERS
REG. U.S. PAT. OFF.

SONOCO PRODUCTS COMPANY

MAIN OFFICE—HARTSVILLE, S. C.

MYSTIC, CONN. LOS ANGELES, CAL. BRANTFORD, ONT. LOWELL, MASS.
PHILADELPHIA, PA. AKRON, IND. GARWOOD, N.J. GRANBY, QUEBEC

MEXICO: Sonoco de México, S. A., Apartado 10239, México, D. F.

DEPENDABLE SOURCE OF SUPPLY

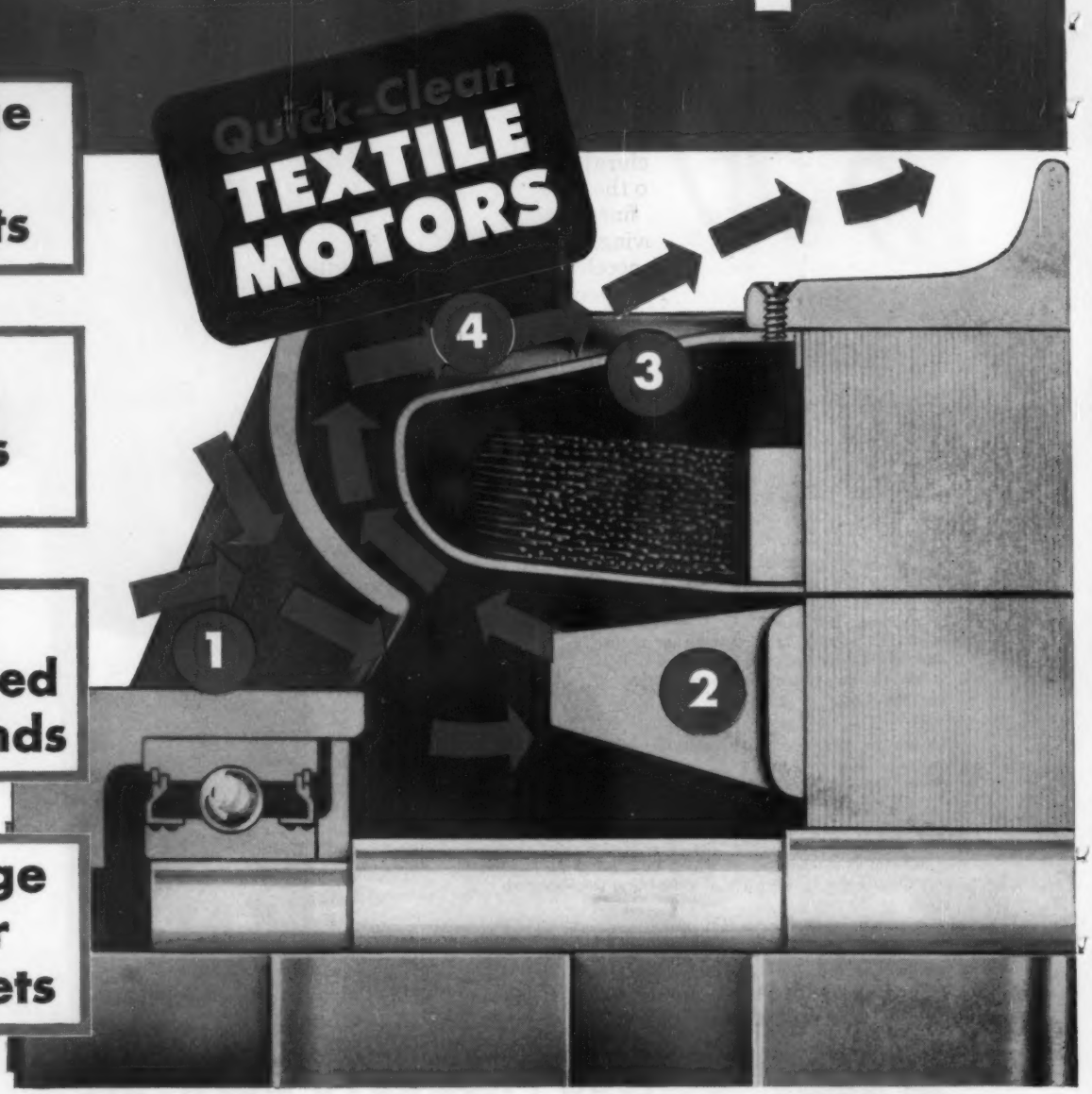
MOTORS that Dirt and Lint Can't Stop

1. Large air inlets

2. Big fans

3. Covered coil ends

4. Large air outlets

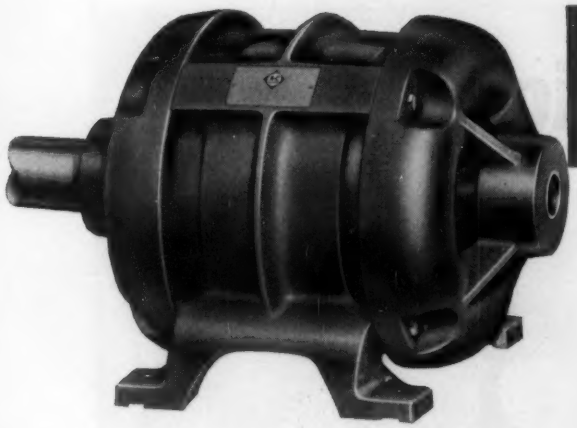


GET COMPLETE INFORMATION: Call your nearby Allis-Chalmers District Office or distributor, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

Texrope and *Quick-Clean* are Allis-Chalmers trademarks.

ALLIS-

For more information, write direct or use Reader Service post card.



Spinning

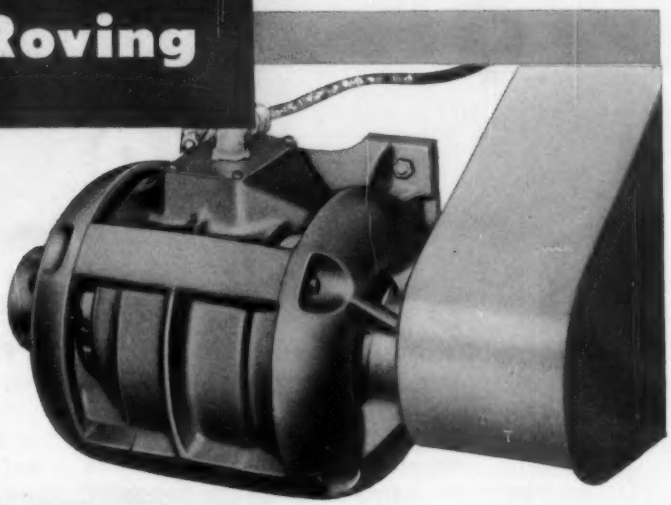
Two important features make this *Quick-Clean* motor your best buy for spinning frame duty. First, wide open design solves problems of clogging and overheating created by lint-laden atmospheres. Powerful fans sweep lint and dirt through wide open air passages and right out of the motor. Air passages are large, smooth, unobstructed.

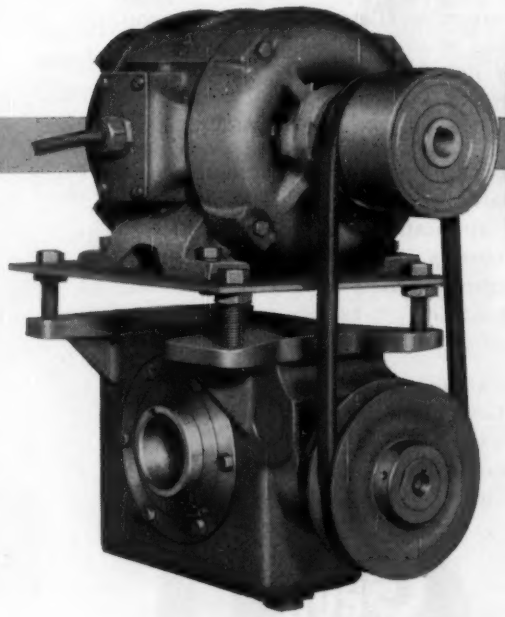
Second, pre-lubricated and sealed double-width, single-row ball bearings are used. They will operate for long periods without attention — yet can be cleaned and repacked when motor is dismantled. Will not drip grease that can damage product.

Roving

The same wide open, self-cleaning *Quick-Clean* design is used in this motor for roving frame applications. Special slow, smooth acceleration characteristics are built into the motor to provide slow starts, fine jogging — produce uniform roving.

No special resistors, no acceleration-reducing clutches, no special motor control are required with this motor. Acceleration is almost three times as long as a standard motor. Special conduit box connections permit relatively high torque when required, such as during "break-in" period of the frame.





Carding

Non-clogging, *Quick-Clean* motor is combined with a *Texrope* drive, mercury clutch and a highly efficient gear reducer to make a compact, reasonably priced power package for cards. These individual card drives solve problems of lighting, cleanliness and safety created by overhead shafting and belting. In addition, duct arrangements for air conditioning are simplified.

Unit requires practically same floor space as tight-and-loose pulley drive. It is mounted on card shaft — independent of card arch — with torque arm to keep gear box from rotating.

A-4600

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News about

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Geon latices | make many fabrics better in many ways:

TOP COATINGS—Geon latices provide maximum durability with minimum weight as finish coats on fabrics for luggage, upholstery, and other products requiring high wear-resistance. Coatings may be clear or pigmented—offer high gloss and excellent light stability—provide decorative, grease-proof, washable finishes.

PRE-COATINGS—Geon latices make excellent prime coats for loose fabrics, to improve top-coat adhesion and act as a barrier to excessive penetration of the top coating.

BINDERS—Natural and synthetic fibers are bound together by Geon latices to make strong, washable non-woven fabrics. Other Geon latex formulations are used as binders for metallic salts that provide resistance to stain or water, and as binders for pigments that lend decorative appeal.

SIZES-FILLERS-CARRIERS—As sizes, Geon latices increase the wear and ravel resistance of carpet backings, toughen felts for floor coverings and trunk linings. As fillers they are used in cotton processing to provide greater stiffness and strength. In other applications, Geon latices serve as carriers for specialty agents such as fungicides and flame inhibitors.

Geon latices are applied without the fire and toxicity hazards common to organic liquids. Methods of application include knife-coating, doctor kiss coating, immersion, spraying, printing, and impregnation. Viscosity, penetration, and coating weight are readily controlled, resulting in a product of utmost uniformity.

For technical information please write Dept. BY-2, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.
Cable address: Goodchemco.
In Canada: Kitchener, Ontario.

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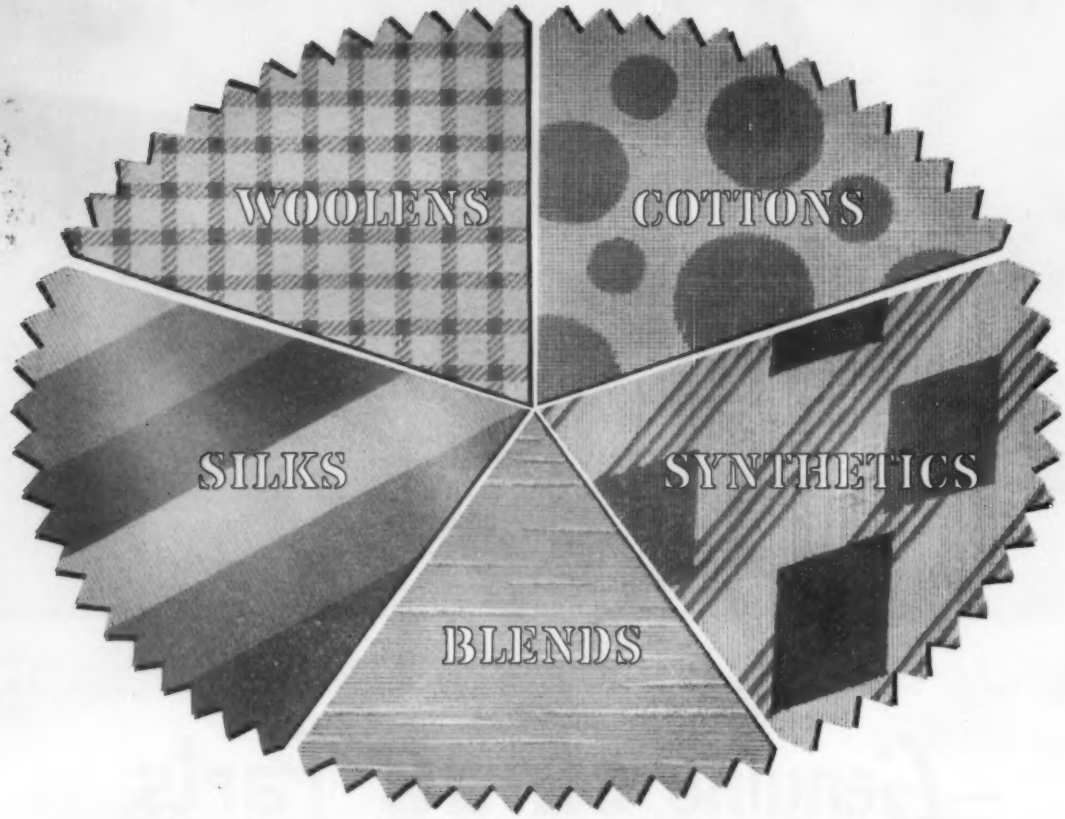

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Phone: 4-5638

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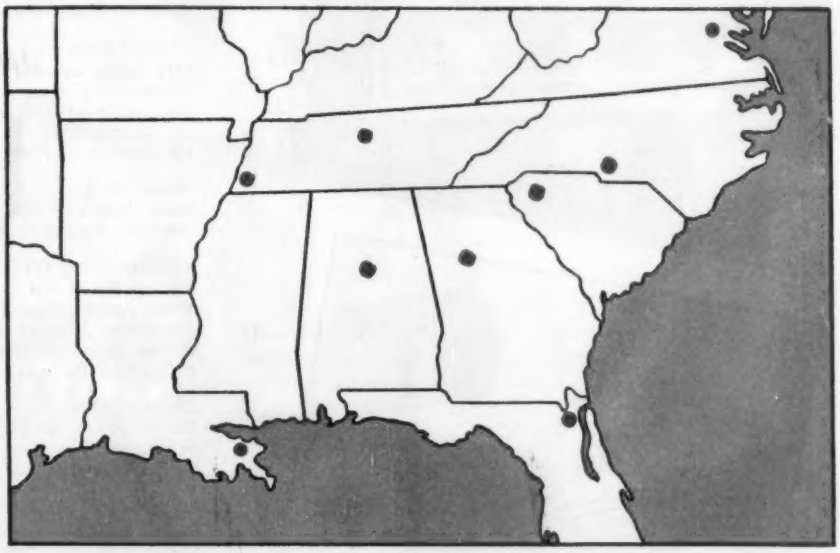
Phone: 49297



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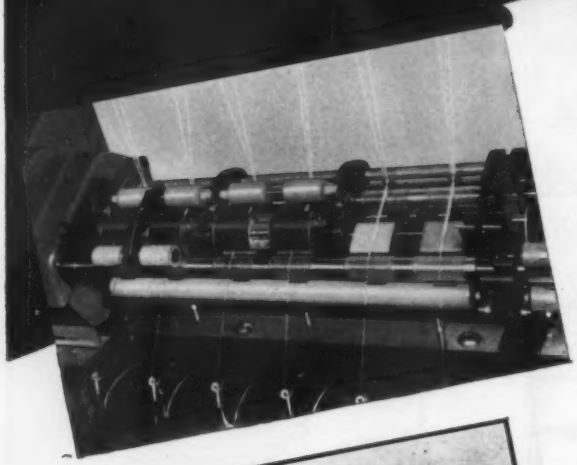

The Duo-Roth "Stay-Clean" steel cage

FRONT ROLL
A new self-aligning, center suspended, Saco-Lowell anti-friction front roll held in a Dixon saddle guide, which eliminates the front cap bars, assures perfect alignment at all times of the front top roll with the bottom steel roll. The advantage of this perfect alignment is better drafting and prolonged life of the top roll covering as has been so successfully demonstrated on the over-1000 Gwaltney frames now in operation.

MIDDLE ROLL
Mill tested Duo-Roth assembly with anti-friction middle roll. Has sealed-in lubricant which eliminates danger of spoiling top or bottom apron with oil and friction drag. The rugged, steel cage is a precision product. Simple means are provided to accurately adjust the clearance between the aprons for the optimum in fibre control.

BACK ROLL
Solid back roll with Nylon gudgeons and a saddle with Rulon bearings. Roll never needs oiling — needs but little cleaning.

RANGE OF DRAFTS
The ability of the "Duo-Roth" Drafting System to give increased drafts ranging from 60 to 100% over current standards and at the same time produce stronger and more uniform yarns has been demonstrated on thousands of spindles in quality-minded mills throughout the world.

AVAILABILITY
The Duo-Roth "Stay-Clean" drafting system can be supplied with new spinning and as a changeover for frames now equipped with Roth spinning.

For further information or a demonstration, contact the nearest Saco-Lowell Sales Office.

*Trademark

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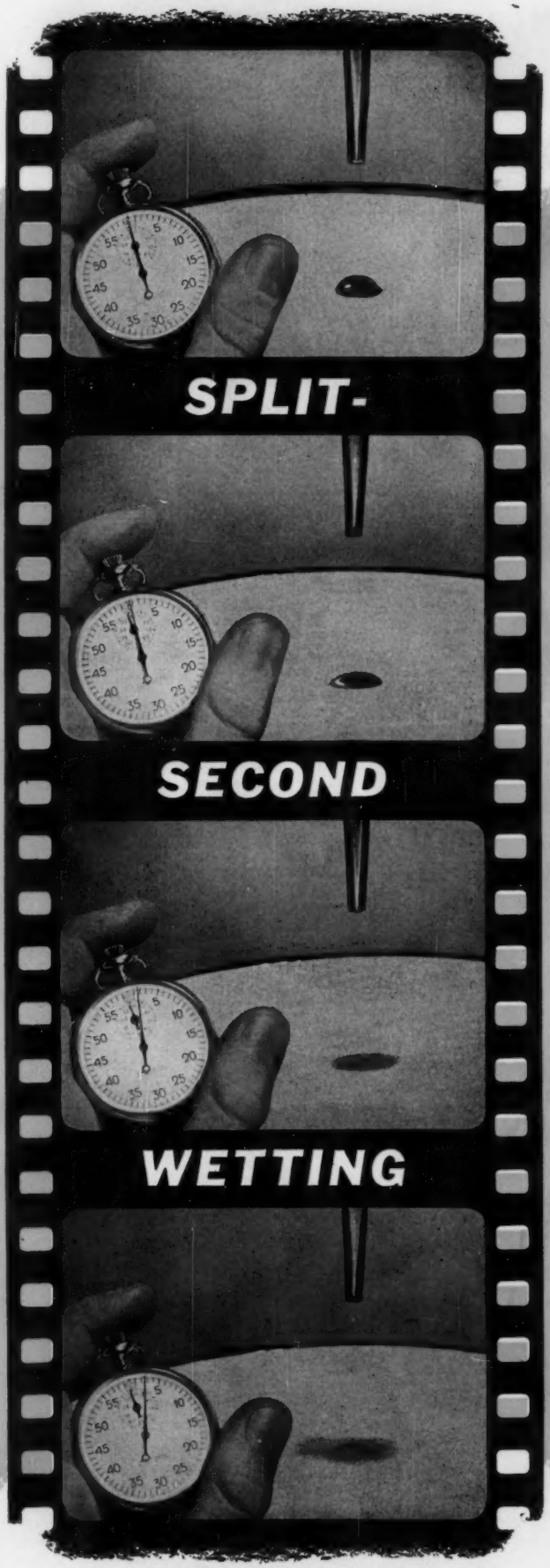

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...as a rewetting agent, too!

If you haven't tried Nopcowet 86-A, it's high time you did. You'll find this new concentrated Nopco product exceptional as a wetting and penetrating agent with either neutral or dilute acid and alkaline solutions.

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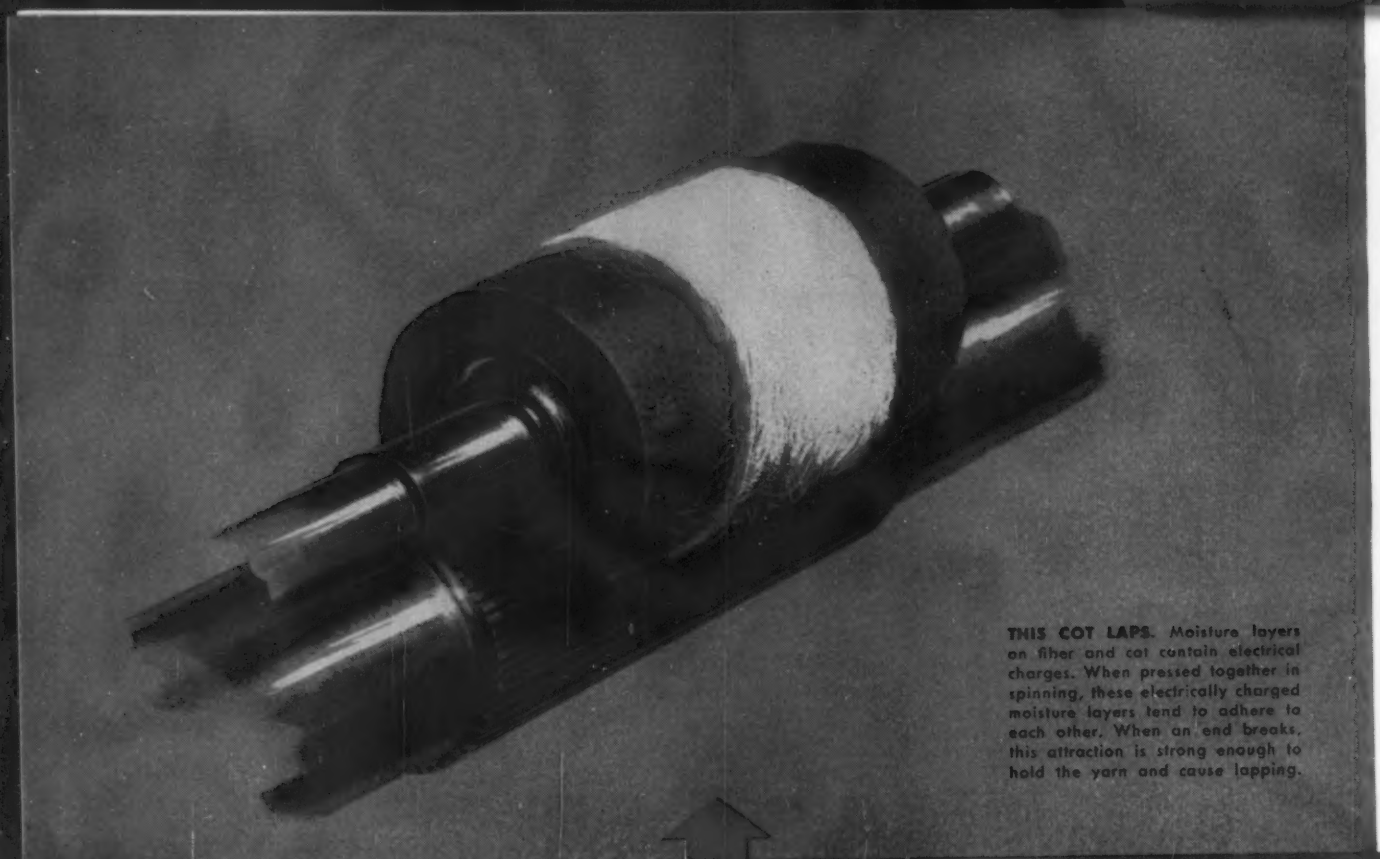
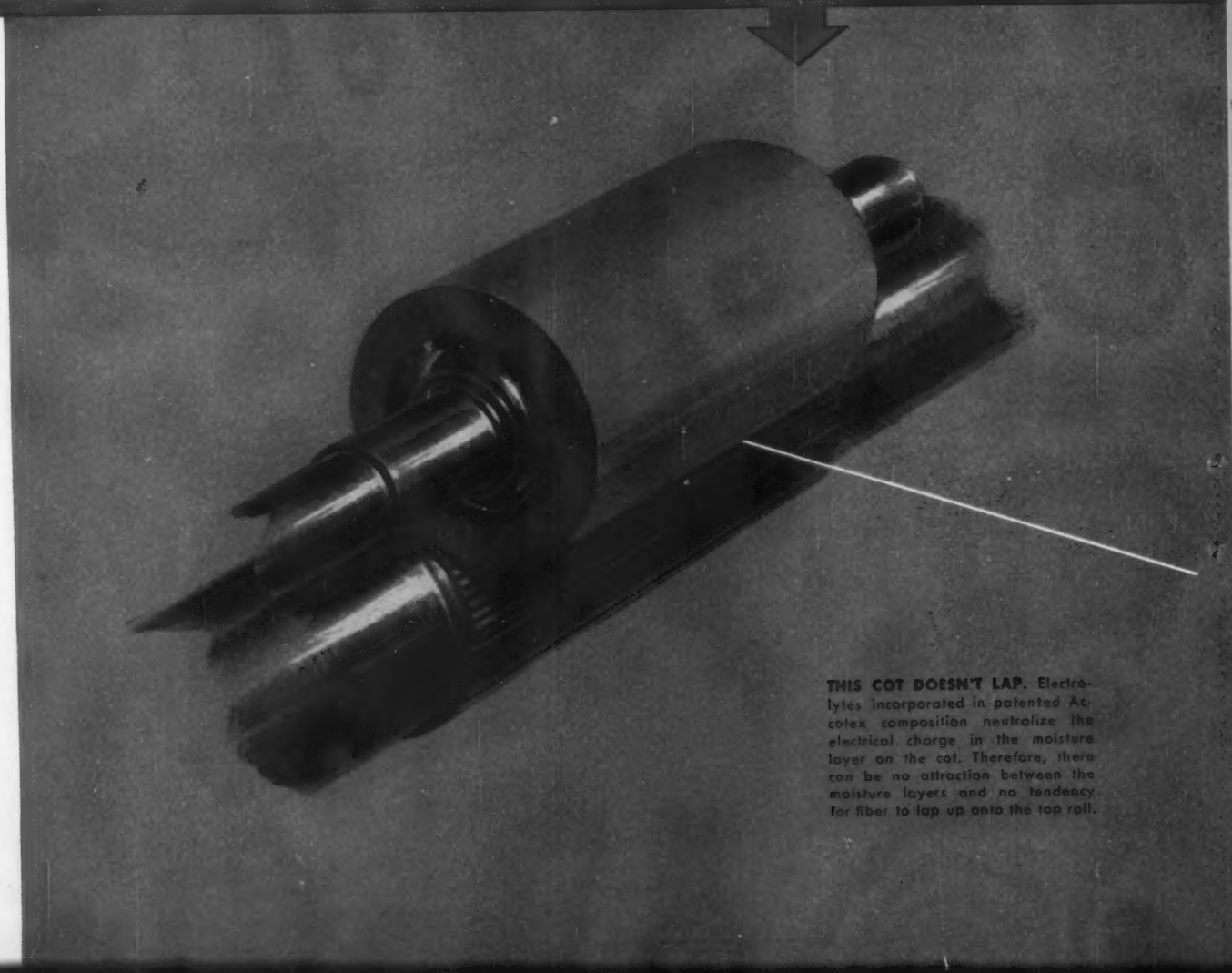
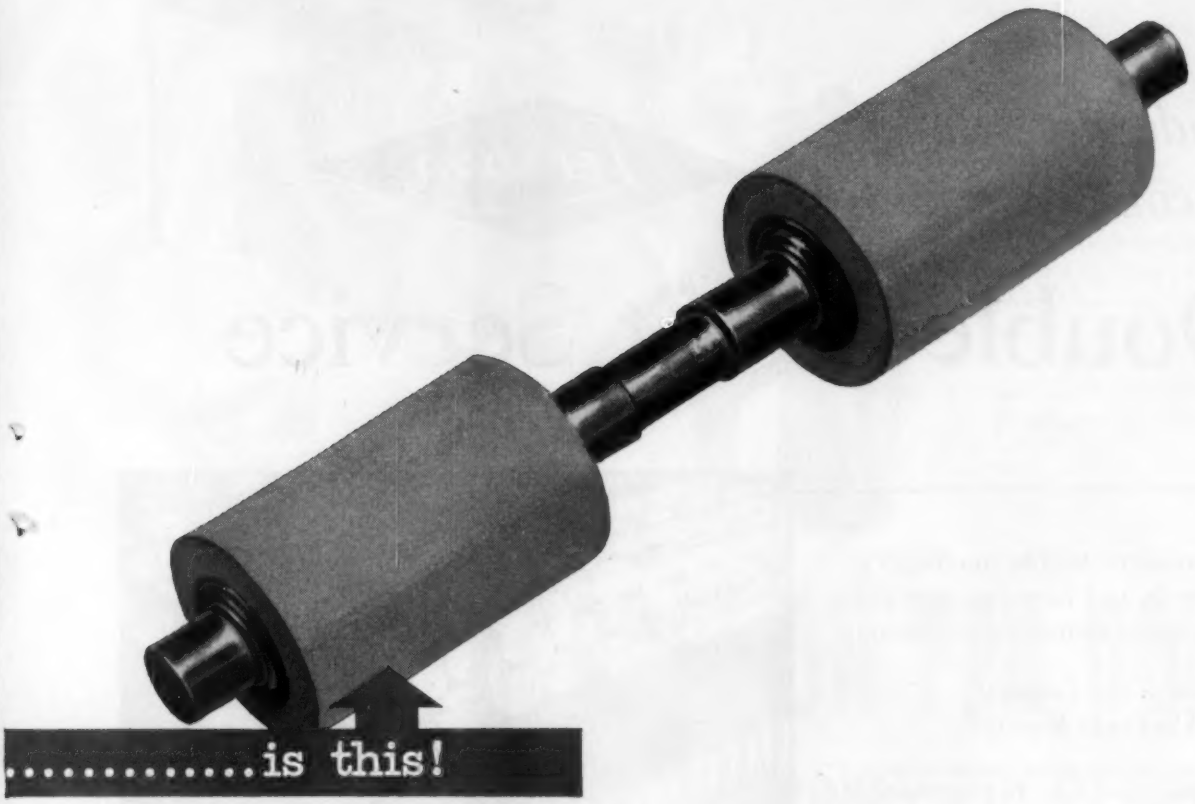


THIS COT LAPS. Moisture layers on fiber and cot contain electrical charges. When pressed together in spinning, these electrically charged moisture layers tend to adhere to each other. When an end breaks, this attraction is strong enough to hold the yarn and cause lapping.

the difference between this...and this.....



THIS COT DOESN'T LAP. Electrolytes incorporated in patented Acotex composition neutralize the electrical charge in the moisture layer on the cot. Therefore, there can be no attraction between the moisture layers and no tendency for fiber to lap up onto the top roll.



ARMSTRONG J-490 ACCOTEX® COTS HAVE BUILT-IN LAP RESISTANCE

One of the best ways to prevent lapping of synthetic fibers—or any type fiber with revolving clearers—is to equip your frames with Armstrong J-490 Accotex Cots.

This roll cover is made of patented synthetic rubber compound that eliminates a basic cause of lapping. Special electrolytes in the rubber neutralize normal electrical attraction between cover and fiber. As a result, J-490 Cots actually tend to *repel* broken ends.

Good fiber control. The J-490 compound offers other important spinning advantages, too. Because it contains no rough fillers, its drafting surface is always uniformly smooth. This roll cover won't pull fibers from the stock or cause excessive ends down.

An exceptionally clean-running cover, J-490 gives good fiber control over long periods of service. It's never affected by oils, dyes, or commonly used textile solvents. In fact, all that's needed to keep this cot spinning like new for years is an occasional re-buffing.

You can prove how long-wearing J-490 Accotex Cots help prevent lapping and improve yarn quality by running a few test sides of these cots. Your Armstrong representative will be glad to arrange this test. Call him today or write direct to Armstrong.

Is eyebrowing a problem in spinning? Armstrong NO-742-S Accotex Cots with the "constant-friction" surface pack waste well back under the clearers and prevent eyebrows from forming.

Send for free booklet. Armstrong "Textile Roll Coverings and Mill Supplies" gives suggestions on selection, installation, maintenance of Armstrong textile products. Write to Armstrong Cork Company, Industrial Division, 6503 Dauphin Street, Lancaster, Penna.

Armstrong ACCOTEX COTS

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Modernize and economize with the LEESONA®

Double-Profit Service

Learn how modern textile machinery will benefit you, and how you can get it under practical, simplified financing

What is the Leesona Double-Profit Service?

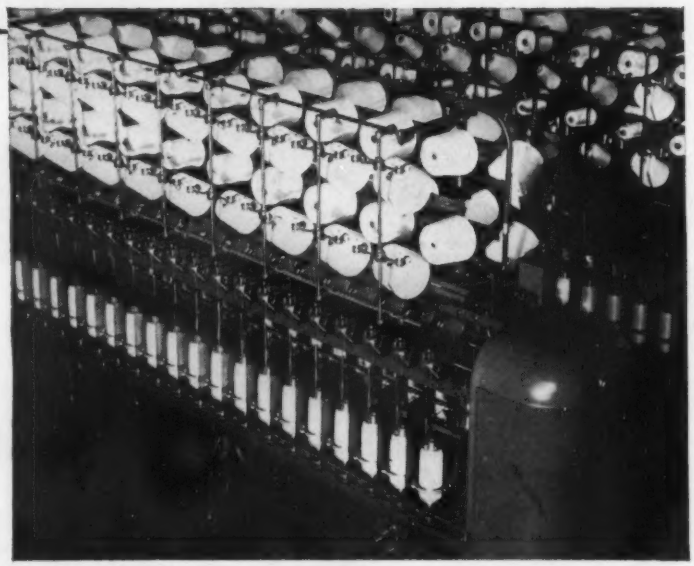
This is a two-way service to the textile industry, developed and offered exclusively by the Universal Winding Company. It is designed: (1) to aid textile mills in determining their twisting and winding machinery requirements; and (2) to aid mills in obtaining the machinery they need for modernization with minimum financial strain. It consists of two parts: Leesona Profit Factor Studies and Leesona Pay-As-You-Profit Plans.

What is a Leesona Profit Factor Study?

It is a detailed, confidential study of a mill's twisting and winding operations — including related operations — followed by a complete analysis with expert recommendations on how to effect savings and improve production. It is entirely without obligation on the part of mill management.

What are the Leesona Pay-As-You-Profit Plans?

Supplementing Leesona Profit Factor Studies, they are Plans designed to help mills strengthen their competitive position while safeguarding their capital and borrowing power. There are two of them — one providing for long-term purchase, the other for long-term lease, of any Leesona twisting and winding machinery.



The Model 10 Ring Twister is a typical Leesona advancement of textile machinery design. By taking advantage of Leesona Profit Factor Studies and Pay-As-You-Profit Plans, many mills are now profiting by the production-improving, cost-cutting features of this and other Leesona twisting or winding machines.

This folder tells you all about the Leesona Double-Profit Service, including Profit Factor Studies and Pay-As-You-Profit Plans. Read how you may take advantage of either of its two valuable features — or combine both to profit *two ways*. Send for your copy today.

23.4.24

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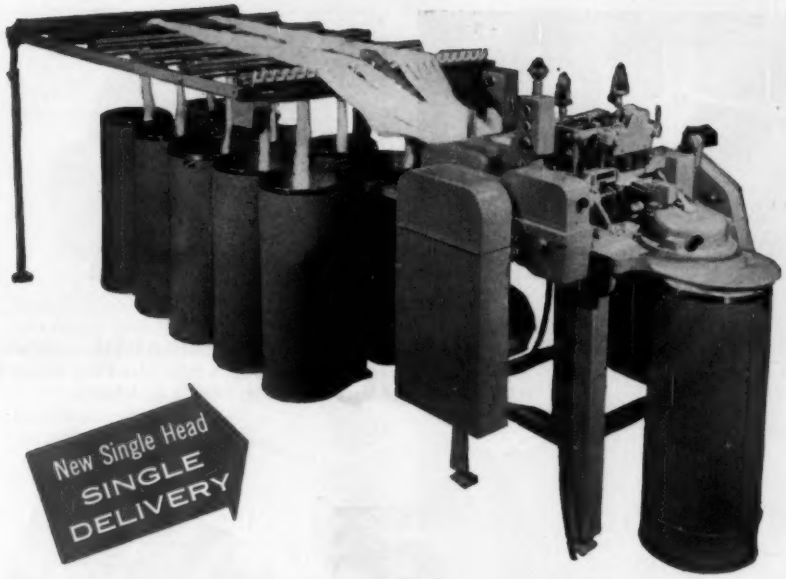

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  From 4" effective pinning to 5".
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- **50% higher production!**
- **Better balanced production!**
- **Easier operation!**
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  Simplified design, sealed bearings.
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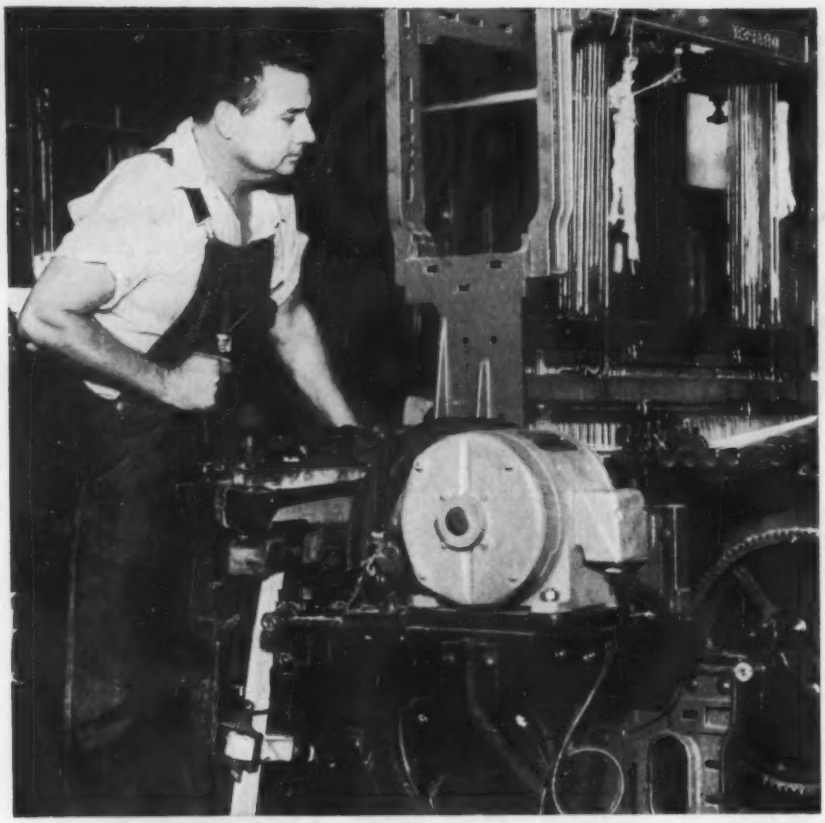
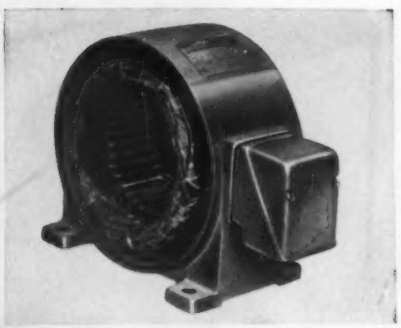
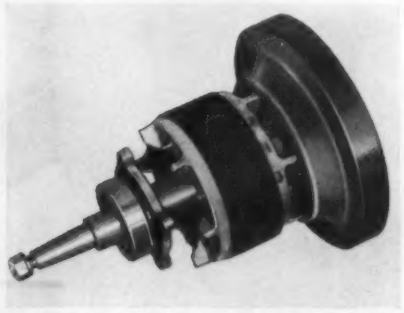


SMOOTHER OPERATION on this loom in a southern cotton mill is provided by a 1-hp G-E Tri-Clad '55' loom motor. This new motor has protection features—physically and electrically—not usually found in ordinary motors.

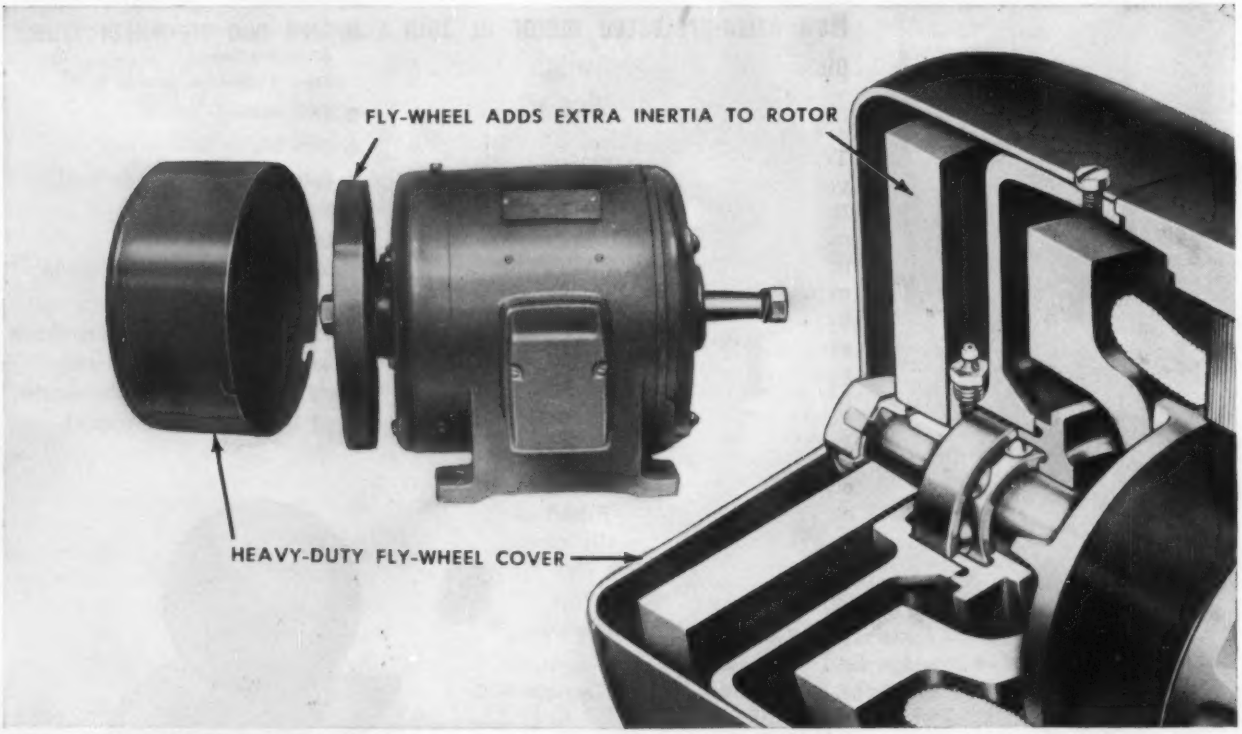


NEW STATOR INSULATION, entirely coated with G.E.'s new Dri-Film silicone water repellent, resists moisture.

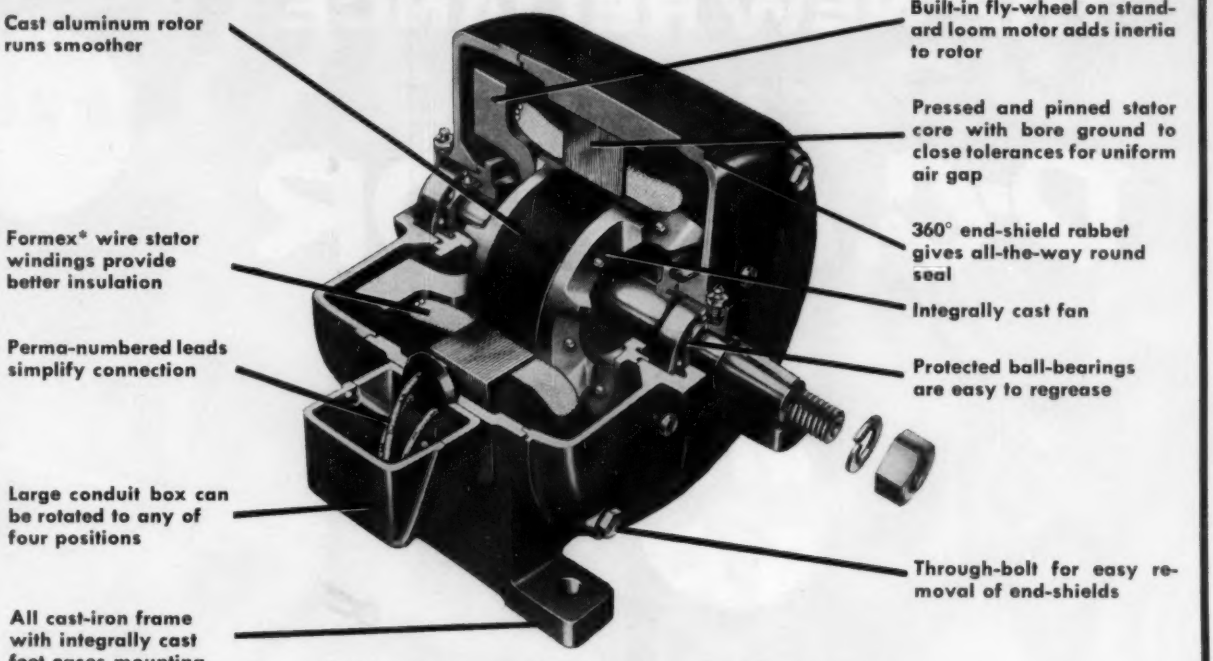


DYNAMICALLY BALANCED rotor and fly-wheel—rotor has integrally cast fans, is shrunk onto shaft for tighter fit.

NEW G-E loom



MORE CONSTANT PICKING SPEED—on those few applications requiring extra high inertia—the standard G-E loom motor can be fitted with an external fly-wheel. Where loom cycles vary widely, this enables the new motor to successfully do a job usually requiring a larger motor. Constant speed gives you more effective picking and lower power costs. Photo shows motor with cover off, and cutaway view demonstrates how the extra fly-wheel becomes an integral part of the motor.


Cast aluminum rotor runs smoother
Formex* wire stator windings provide better insulation
Perma-numbered leads simplify connection
Large conduit box can be rotated to any of four positions
All cast-iron frame with integrally cast feet eases mounting
Built-in fly-wheel on standard loom motor adds inertia to rotor
Pressed and pinned stator core with bore ground to close tolerances for uniform air gap
360° end-shield rabbet gives all-the-way round seal
Integrally cast fan
Protected ball-bearings are easy to regrease
Through-bolt for easy removal of end-shields

CUTAWAY VIEW OF NEW TRI-CLAD* '55' LOOM MOTOR

motor gives constant picking, cuts power costs

APPROVED BY FACTORY MUTUAL, new switch keeps lint out, keeps motor running full time.

New extra-protected motor in both standard and fly-wheel types, plus new lint-tight switch, combine to help withstand severe loom service with minimum maintenance

Top fabric output is possible when you power your looms with General Electric's new Tri-Clad '55' loom motors. The standard motor has an internal fly-wheel, and the fly-wheel motor has both internal and external fly-wheel for applications requiring extra-high inertia.

Extra motor protection is built in by using new insulating materials and cast-iron end-shields and frames. Stator laminations are welded in eight places for a more rigid steel core, and G.E.'s Dri-Film* silicone water repellent virtually eliminates core insulation failure due to high humidity.

Large Grease Reservoir enables motor to run for long periods without regreasing. When necessary, regreasing is made easy by simply removing drain plug and giving bearing a few quick shots with grease gun.

New lint-tight loom switch has labyrinth seal arrangement around recessed toggle opening. Die-cast aluminum handle slides against moisture-, fungus-, and insect-proof cotton felt gasket.

For more information, contact your local G-E Apparatus Sales office, or authorized General Electric distributor. Write for Bulletin GEA-5858A, General Electric Co., Section 654-35, Schenectady 5, New York.

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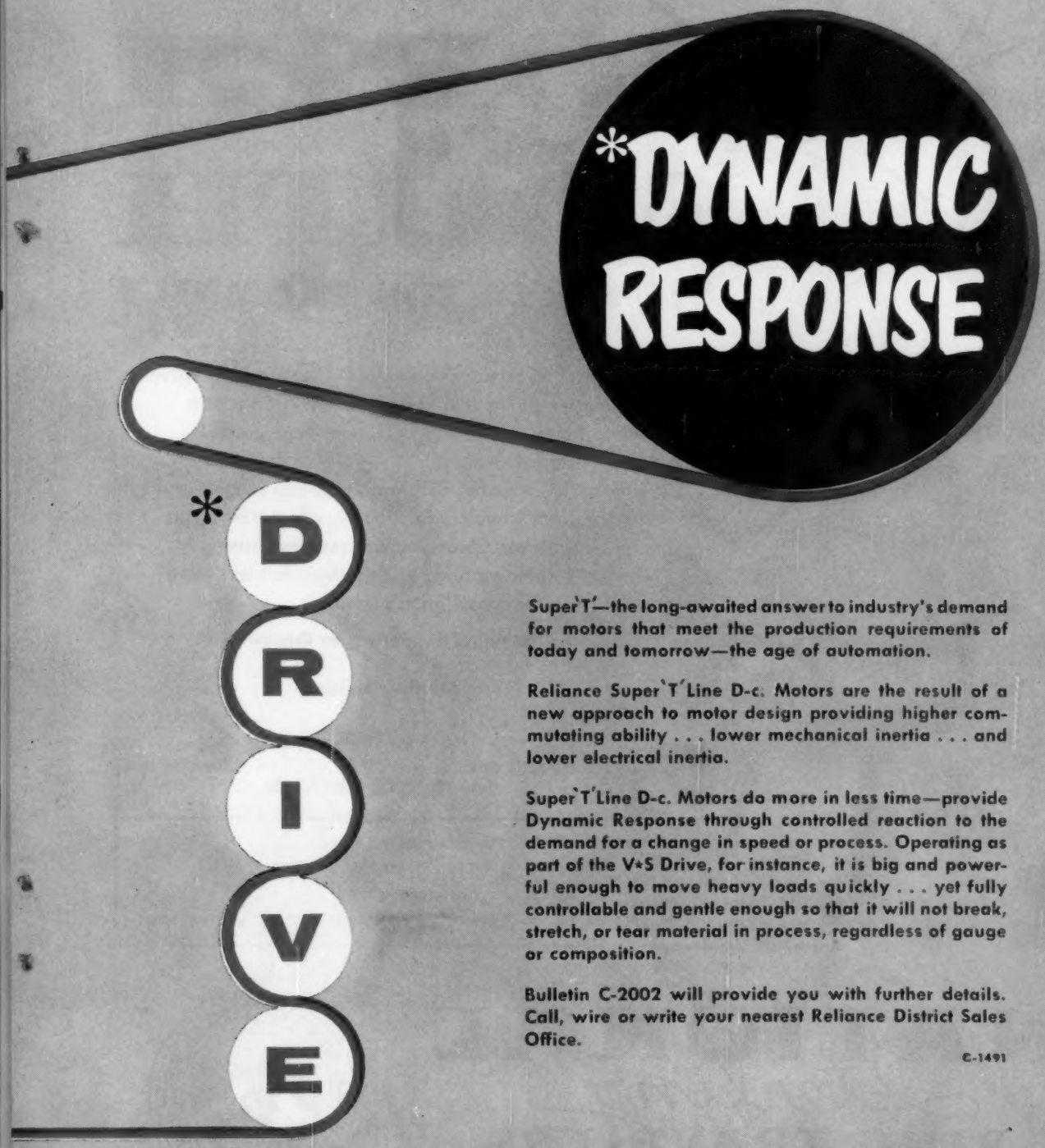

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Reliance Super'T'Line D-c. Motors are the result of a new approach to motor design providing higher commutating ability . . . lower mechanical inertia . . . and lower electrical inertia.

Super'T'Line D-c. Motors do more in less time—provide Dynamic Response through controlled reaction to the demand for a change in speed or process. Operating as part of the V*S Drive, for instance, it is big and powerful enough to move heavy loads quickly . . . yet fully controllable and gentle enough so that it will not break, stretch, or tear material in process, regardless of gauge or composition.

Bulletin C-2002 will provide you with further details. Call, wire or write your nearest Reliance District Sales Office.

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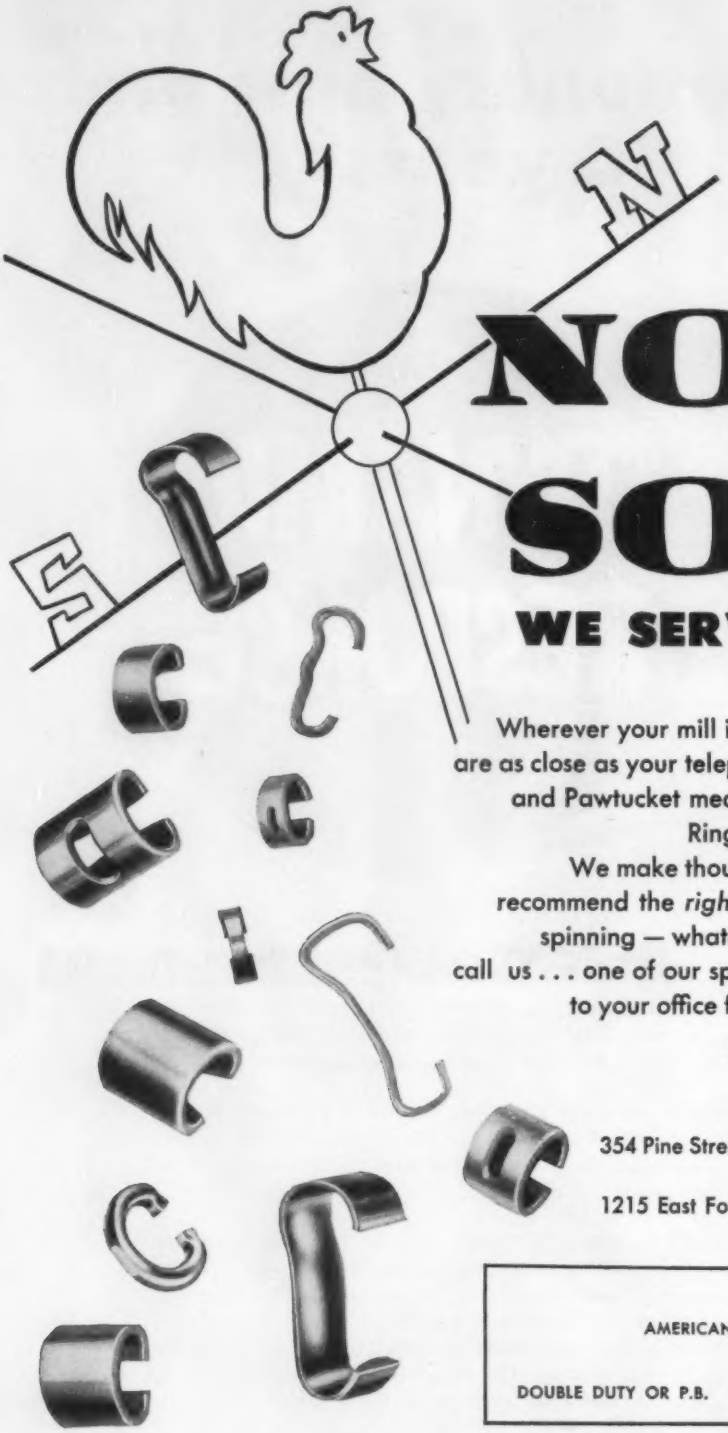

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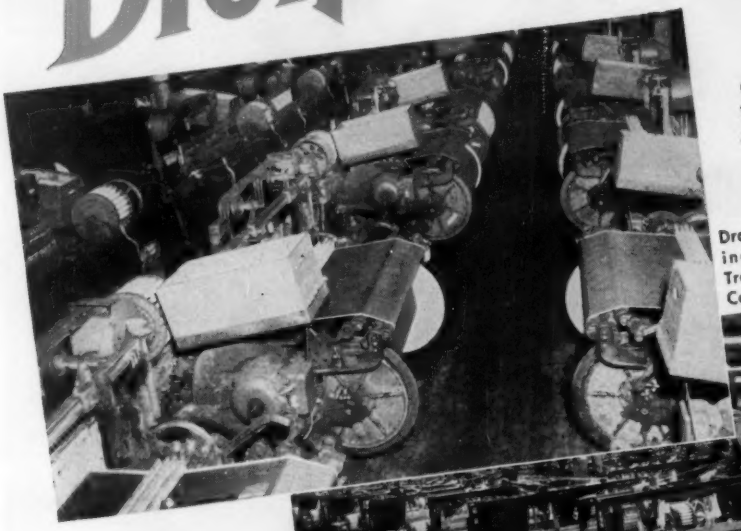
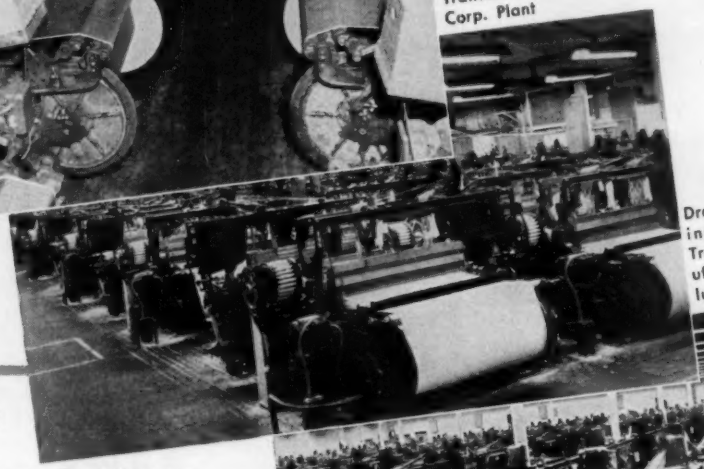
Diehl POWER TRANSMITTER

is assuring maximum weaving efficiency in leading mills

Thousands of Diehl Power Transmitters are operating DRAPER LOOMS in leading textile mills. Many have been in continuous operation for five years.



Draper X2 looms operating with Diehl Power Transmitters in Cone Mills Corp. Plant



Draper XD looms operating with Diehl Power Transmitters at Bibb Manufacturing Company, Columbus, Georgia.

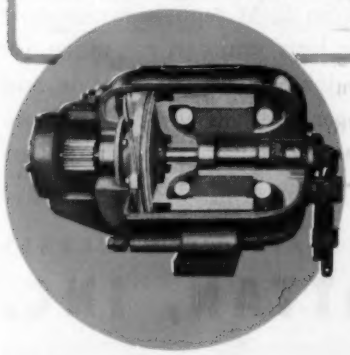
Draper XD looms operating with Diehl Power Transmitters at the Lyons Plant, Synthetic Division, M. Lowenstein and Sons.

MILL MEN ARE ENTHUSIASTIC ABOUT THESE FEATURES

- "Stored energy" for smooth, rapid starts and positive picking.
- Precision braking.
- Minimum fluctuations of speed and motor current.
- Lower power consumption.
- Lower motor heat losses.
- Eliminates current regeneration.
- Simplicity and ease of maintenance.

. . . all of which adds up to increased mill production, improved quality of cloth, lowered operating costs and long, trouble-free service.

We will welcome an opportunity to tell you—without obligation—how the Diehl Power Transmitter can bring these benefits to you.



This cutaway view illustrates the inverted construction of the power transmitter and shows the rotor which revolves around the outside of the stator on a hollow shaft—providing the essential inertia without the disadvantages of a separate fly wheel. Note the pinion driving shaft with attached clutch-plate which is shifted axially by simple lever at front end of motor, regulating clutch engagement pressure and providing controlled driving and braking action.

DIEHL MANUFACTURING COMPANY

Electrical Division of THE SINGER MANUFACTURING COMPANY

Finderne Plant, SOMERVILLE, NEW JERSEY

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HOW TO BUY ENDLESS BELTS

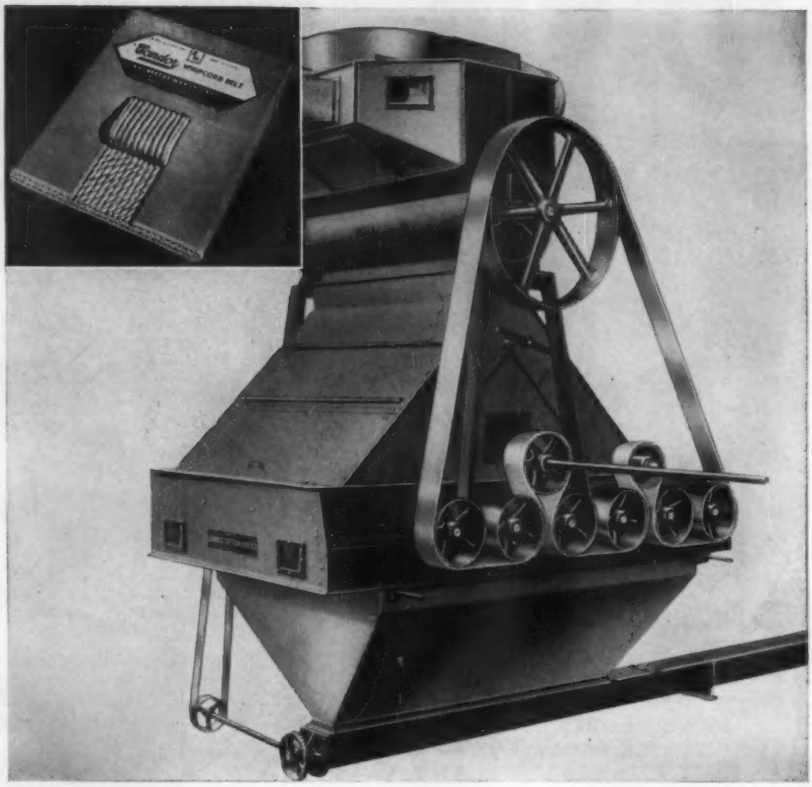
FOR LONGER LIFE on "Belt-Killer" Drives

"More Use per Dollar"

Look for a rubber belt engineered to give maximum flexibility and to eliminate belt shrinkage or stretch and separation at the cover-end.

Belt failures caused by excessive tensions, small pulleys and high speeds can be avoided by the careful selection of the endless belt you buy. Flexibility is of primary importance when selecting a belt for machines where serpentine drives supply power for several operations — for built-in drives with reverse bends and short centers. The belt you select should flex naturally in either direction . . . without stretching. It should be impervious to extreme atmospheric conditions because excessive shrinkage damages shaft bearings and shortens belt life. In ordinary belts, the cover-end tends to separate when rounding the pulleys because stress is concentrated in a narrow line seam. Look for the belt that extends the cover-end splice over a wide area so that stress is dissipated.

Specify, by name, the endless belt engineered to give you these advantages . . . specify Condor Whipcord Endless Belt.



CONDOR WHIPCORD ENDLESS BELT

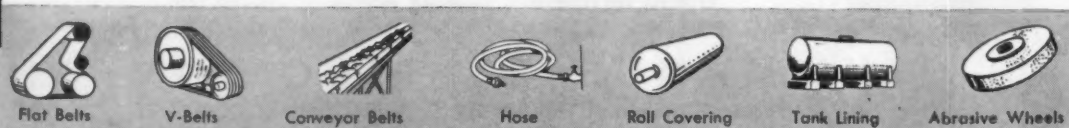
An all-purpose belt designed for all types of endless drives, Condor Whipcord Belt offers exceptional advantages for "belt-killer" drives — short centers, small take-up, small pulleys, reverse bends, high speed and high tension. Extremely flexible, they feature an endless-wound, sealed-in cord construction which is pre-stretched during manufacture . . . they will not stretch or shrink on the drive and are virtually unaffected by variations in atmosphere. R/M's exclusive Extensible-Tip splice is a series of rubber rivets spaced over a wide area to secure the cover-end and eliminate cover separation. On some drives, Condor Whipcord Belts have outlasted 3 to 10 ordinary belts.

Let an R/M representative show you how you can get more dependable machine operation and longer endless belt life — "More Use per Dollar" — with Condor Whipcord Endless Belt.

RM 517 T

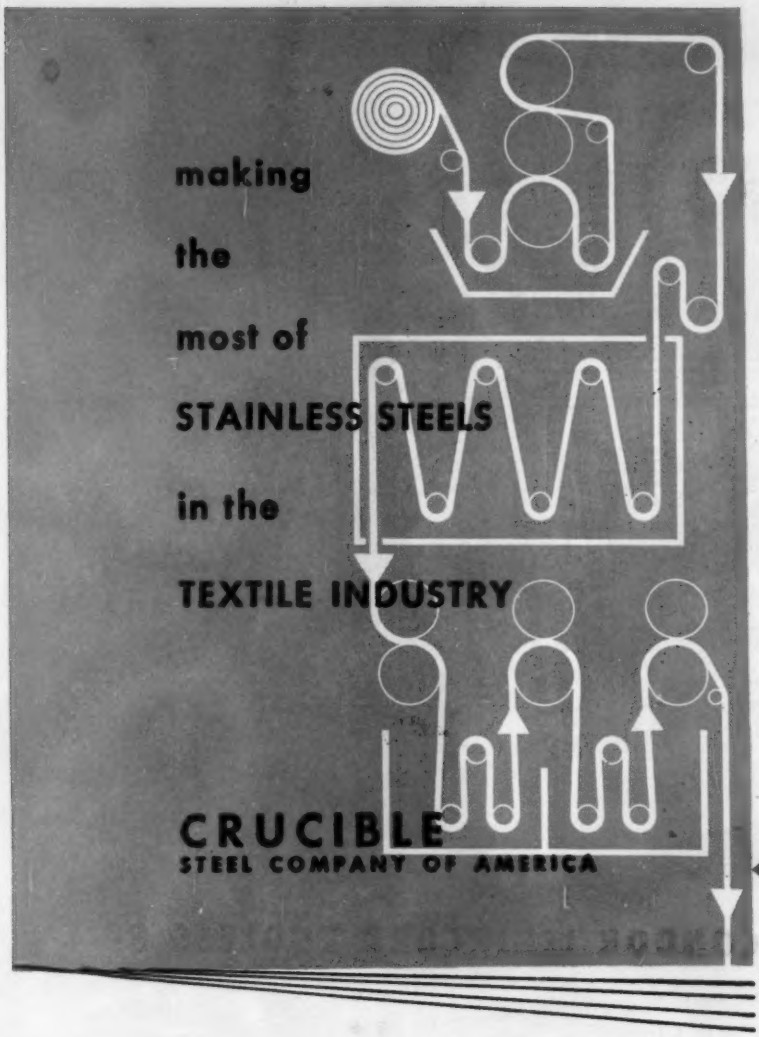
MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Packings • Engineered Plastic, and Sintered Metal Products • Bowling Balls

For more information, write direct or use Reader Service post card.



NEW BOOK SHOWS HOW
from dyehouse to loom

YOU'LL SAVE WITH STAINLESS

Dye vats...mixing tanks...slashers...shuttle tips—the great and growing list of stainless steel applications in textile mills highlights the *progress with profit* made possible by the wide family of stainless alloys.

In this 32-page Crucible booklet you'll find information of importance on every phase of textile processing. It tells you that Crucible Rezistal stainless steels are produced in many grades—to withstand not only attack by textile mill chemicals . . . but also to resist heat and wear. You'll find information of practical importance on equipment design, maintenance . . . and factual data on why stainless stands up so well in textile mill applications.

Get your copy of this valuable booklet now . . . simply fill out the coupon and mail it to Crucible.

Crucible Steel Company of America
Dept. TW, Henry W. Oliver Building
Pittsburgh, Pa.

Send me a copy of "Making the Most of Stainless Steels in the Textile Industry"

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CRUCIBLE first name in special purpose steels

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CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

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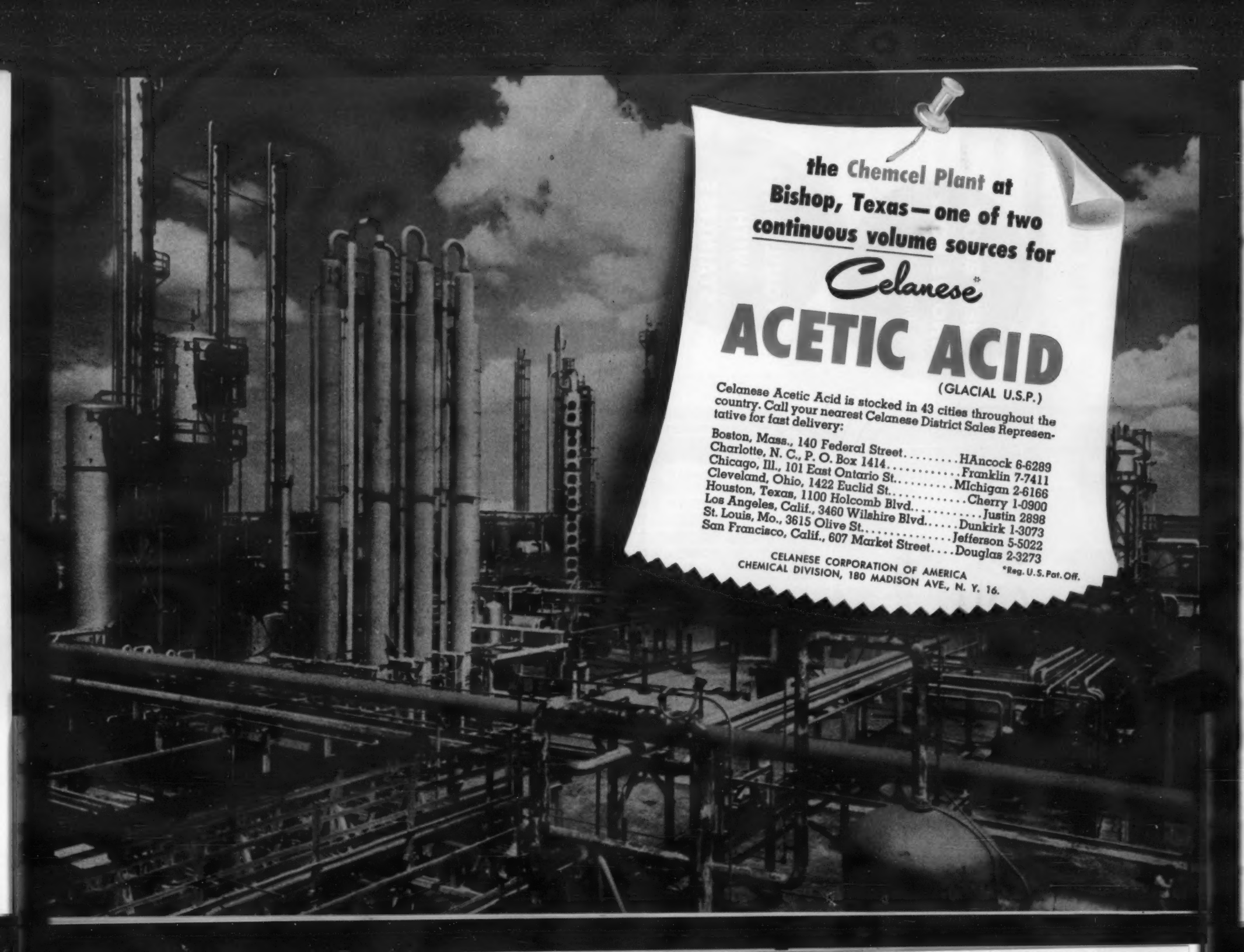
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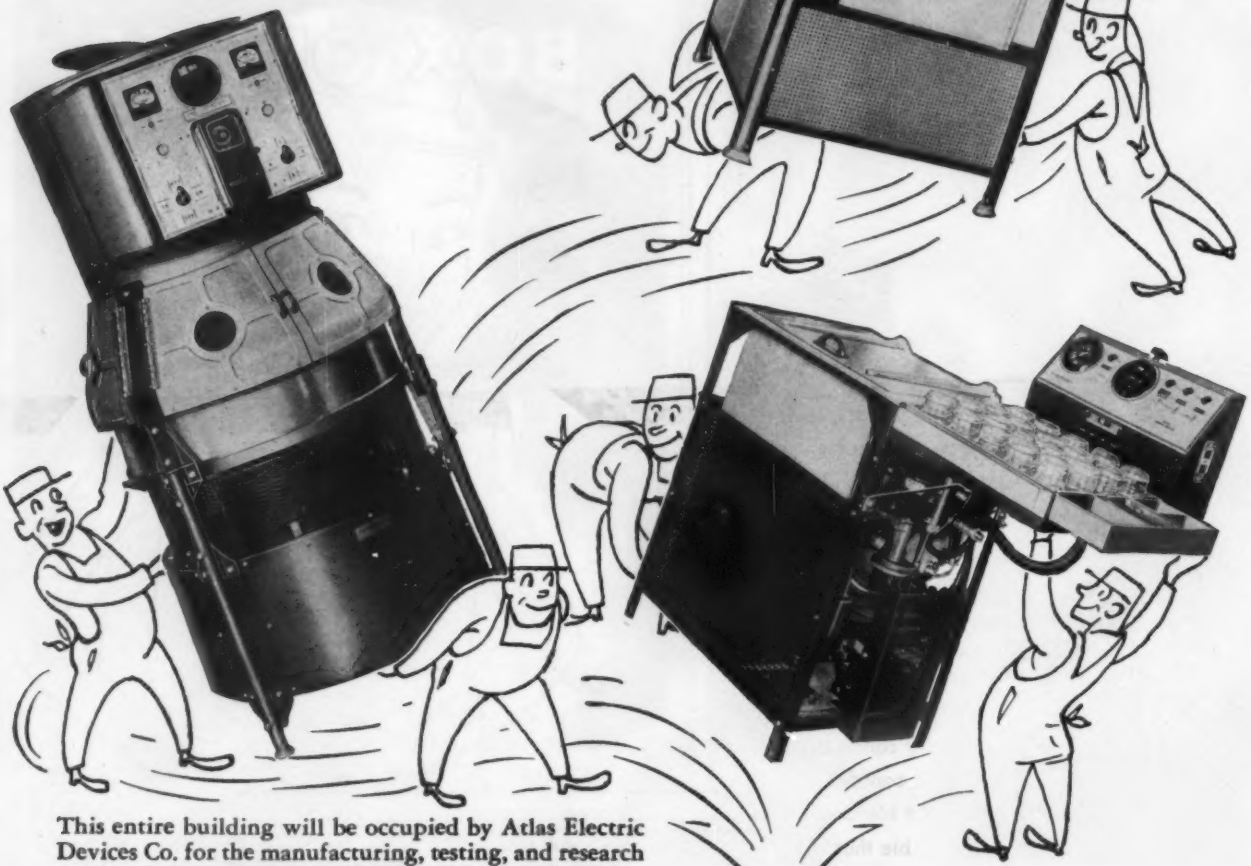
WE'RE MOVING!

ATLAS-OMETERS

FADE-OMETERS . . .
WEATHER-OMETERS . . .
LAUNDER-OMETERS . . .

are moving February 15, 1955,
to the new Atlas Plant at
4114 North Ravenswood Avenue,
Chicago 13, Illinois



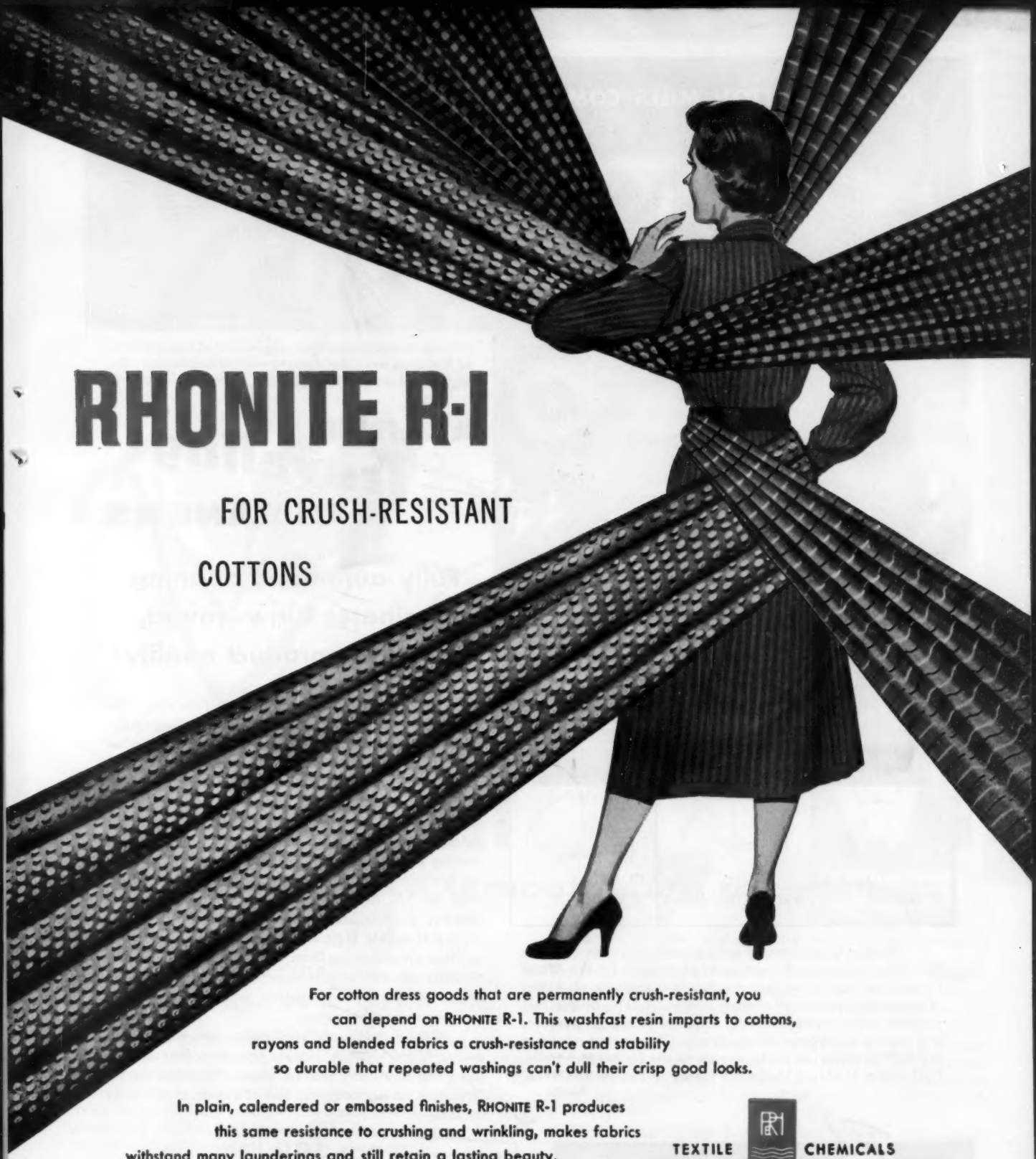
This entire building will be occupied by Atlas Electric Devices Co. for the manufacturing, testing, and research work of Fade-Ometers, Weather-Ometers, Launder-Ometers, Atlas Scorch Testers, and the Atlas Accelerator. After February 15, 1955, address all communications to the new address.

ATLAS ELECTRIC DEVICES CO.
4114 N. Ravenswood Ave., Chicago 13, Illinois, U.S.A.
Telephone EAstgate 7-4520

Sales Representatives:

Charlotte	New York	Philadelphia
San Francisco	Seattle	Pawtucket
Los Angeles	Portland	

and other principal cities throughout the world.



RHONITE R-1

FOR CRUSH-RESISTANT COTTONS

For cotton dress goods that are permanently crush-resistant, you can depend on RHONITE R-1. This washfast resin imparts to cottons, rayons and blended fabrics a crush-resistance and stability so durable that repeated washings can't dull their crisp good looks.

In plain, calendered or embossed finishes, RHONITE R-1 produces this same resistance to crushing and wrinkling, makes fabrics withstand many launderings and still retain a lasting beauty.

For unusual crush-resistance, it pays to use RHONITE R-1.

Write or call for complete information about RHONITE R-1—one of the quality chemicals for textile finishing made by Rohm & Haas Company.

TEXTILE CHEMICALS

ROHM & HAAS COMPANY

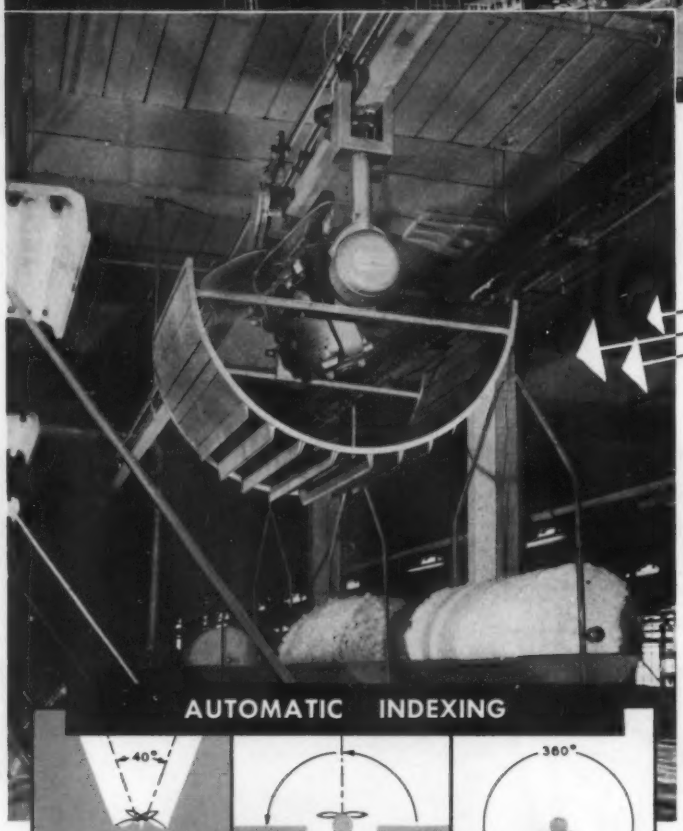
WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

RHONITE is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.

JOANNA COTTON MILLS COMPANY... *a Bahnson Customer since 1926!*

This prominent manufacturer, a user of many types of Bahnson equipment, reports greater cleaning efficiency and economy with Allred Traveling Cleaners.



ALLRED Traveling CLEANERS

Fully automatic cleaning eliminates blow-downs, improves product quality!

End costly shutdowns for manual cleaning! The new Allred Traveling Cleaner *completely* cleans walls, ceilings, monitors, sash openings, beams . . . all other lint-collecting surfaces in a pre-determined pattern.

Blowing perpendicular to its ceiling-suspended or column-mounted track, the Allred Cleaner completes a circuit at a pre-set angle, then *automatically* indexes to a different air flow direction for each succeeding circuit, the total cleaning arc variable from 40° to a full circle. This directed air blast of the Allred, with its 1/3 horsepower motor, has proved more effective than ceiling cleaners requiring up to 2 hp.

Adjustable U-Shield blades protect card webs or other critical areas from the air blast. This is particularly effective in cotton carding and intermediate areas, and in circular knitting, where it keeps stop motions thoroughly clean.

Get full details on the efficient, time- and money-saving Allred Cleaner, already proved in Joanna Cotton Mills and other leading plants. Or write for information on our complete line of automatic cleaning equipment.

Weekly blow-down of ceilings and machinery in this Card Room have been completely eliminated by the Allred Cleaner, as shown by this unretouched photograph taken after several months of cleaner operation. The ceiling had not been blown-down manually since the Allred installation, and none is anticipated in the future. The cleaner rotates a full 360° to clean the cards, as well as the ceiling and walls. Part of the U-Shield blades are closed to protect the webs.

* **91 OF THE TOP 100**

Of the 100 top textile manufacturing firms in the nation, 91 are users of Bahnson equipment . . . a record of preference that is high testimony to Bahnson engineering skill.

Bahnson COMPANY
WINSTON-SALEM, N. C.

AIR CONDITIONING • HUMIDIFICATION • CLEANING

Monsanto
TEXTILE
TALK

NEW STAR

joins Monsanto's famous team of catalysts!

AC-6 steps up curing efficiency as much as 25%

Resin-finished textiles can now be cured more rapidly—more efficiently.

New AC-6 was formulated by Monsanto for faster catalytic action. It lets you approach complete resin utilization at the lowest possible cure cycle.

Uniformity of resin application is assured by its relatively long bath life. Catalyst AC-6 also permits full development of fabric properties. There is minimum resin add-on—minimum danger of odor formation.

You get all this—and economy, too. Increased catalytic activity is combined with low product cost.

AC-6 is compatible in resin baths with urea formaldehyde, methylated methylol melamine, modified urea resins, and most cationic, anionic and non-ionic softeners and penetrants.

In mill runs on cotton fabric, Catalyst AC-6 has demonstrated its ability to outperform other catalytic agents. When AC-6 was added to the bath, identical fabrics showed superior emboss durability, gloss retention and wrinkle recovery.

Mail coupon today for technical bulletin and sample bottle of Catalyst AC-6.

For faster, low-cost curing ...

CATALYST AC-6

MONSANTO

Monsanto Chemical Company, Plastics Division
Dept. TW-3, Springfield 2, Massachusetts

Please send me, without obligation, the technical bulletin on new Catalyst AC-6, and 8-oz. sample bottle.

Name_____

Company_____

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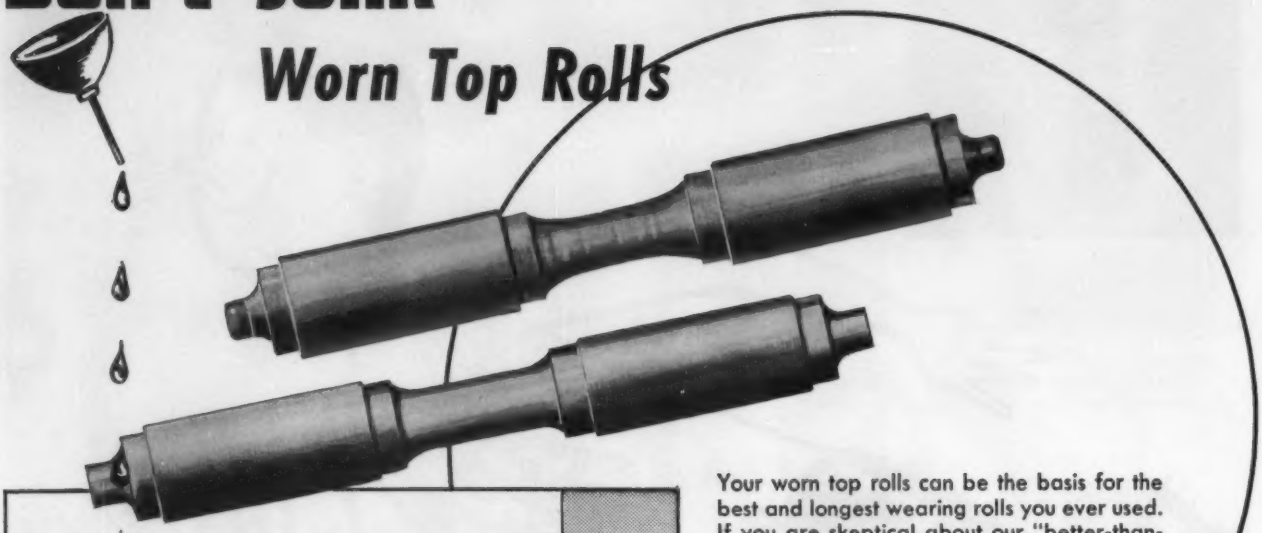
Don't Junk

Worn Top Rolls



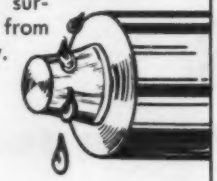
Your worn top rolls can be the basis for the best and longest wearing rolls you ever used. If you are skeptical about our "better-than-new" claims for Ideal Specialloy Reconditioned Top Rolls, here are some things we can prove.

Ideal Specialloy surfaces have a cushioning action . . . tough—but oh so gentle . . . on saddles and cap bars.

Goes Weeks Without Attention

RETAINS OIL

Case hardened steel surfaces reject oil. Require daily oiling. Ideal Specialloy porous surfaces absorb oil and hold from 2 to 4 weeks oil supply.



SPECIALLOY SAVES MONEY

Specialloy Reconditioning means longer life for top roll assemblies, less oiling labor, and sharply reduced seconds . . . a worthwhile net saving to you.

NO OIL SPOTS

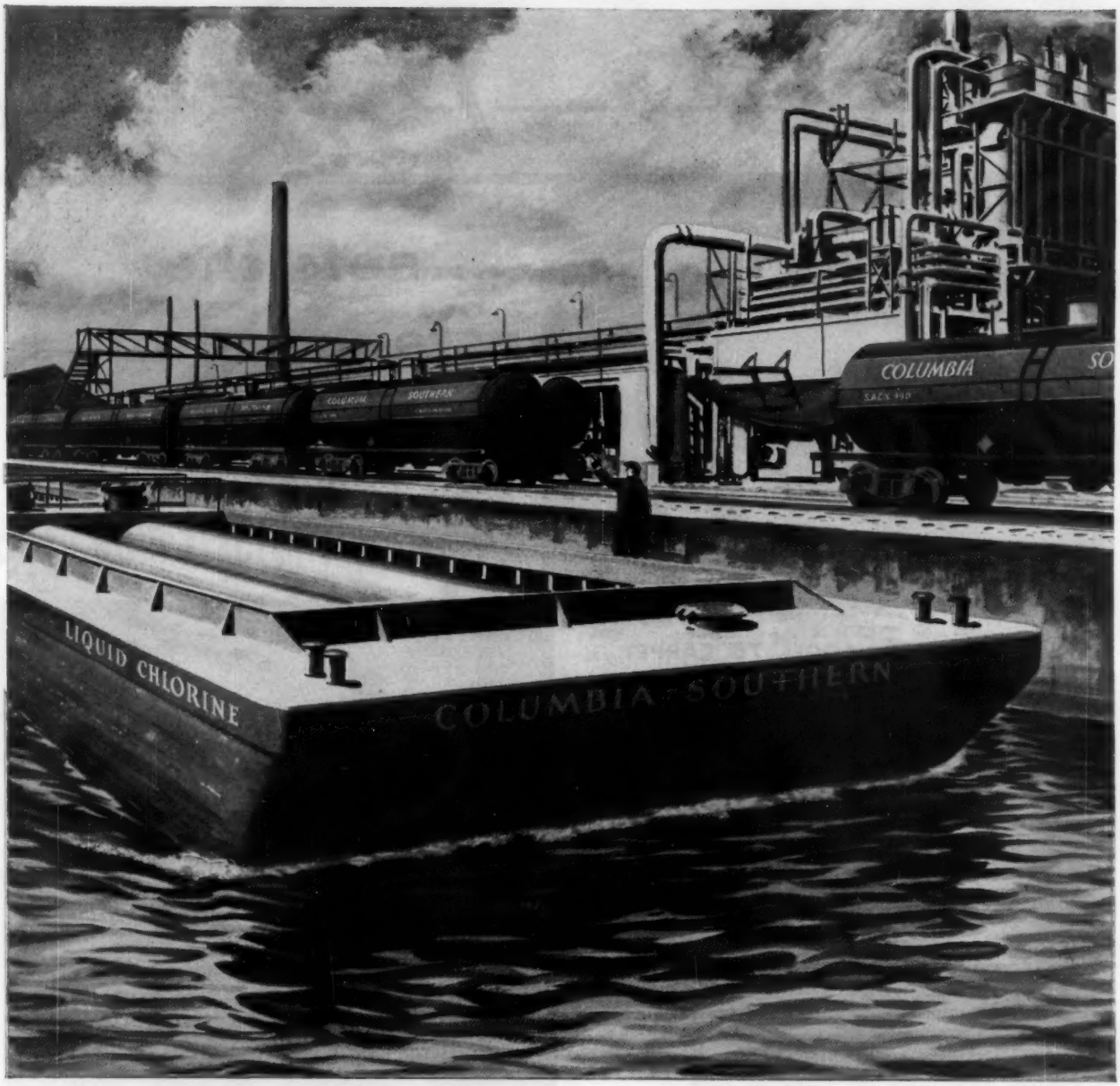
The oil stays on the Specialloy bearing parts and off of the yarn. Oil seconds are practically eliminated.

Don't junk your worn top rolls. Let us show you why Specialloy Reconditioning will give you the best top rolls obtainable. Let us recondition a half dozen of your worn rolls to prove our claims.

Ideal Machine Shops, Inc.

Bessemer City, N. C.

Continuous Service to Textile Mills Since 1924



STILL AHEAD!

Still the leading merchant producer of Chlorine

Columbia-Southern has complete facilities to render excellent service to chlorine consumers. Our Technical Service, Transportation and Traffic staffs are always ready to serve you.

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Super Tufter

...sets the standard in Tufting Machinery

SUPER TUFTER MODEL 76 CARPET MACHINE WITH PATTERN CONTROL ATTACHMENT OFFERS THESE OUTSTANDING FEATURES:

- Machine with pattern control attachment can produce any design or pattern which can be drawn on paper.
- No rethreading for design changes.
- Designs may be changed in matter of minutes.
- No mechanical working parts above eye-level.
- Positive feed yarn control.
- No roll-type yarn feed on pattern attachment.
- No yarn slippage.
- Easier to thread.
- No troublesome clutches or electrical devices to get out of order.

Skillful Engineering plus Rugged Construction means Superior Yardage Machines. Available in 40, 45, 62, 76, 121, 168 and 208 inch widths.

Super Tufter
MACHINERY COMPANY, INCORPORATED

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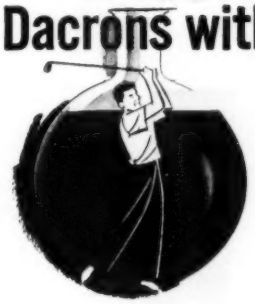
*Trade Mark Reg. Pending
†du Pont Polyester fiber

AMACRON RED VIOLET LS

AMACRON ORANGE LS

Glorify your Dacrons with AMACRON* DYES

An all-new range of SUNFAST colors created specifically for DACRON†



AMACRON BLUE RLS

AMACRON RED BLS

AMACRON YELLOW LS

Here at last is a new range of dyes expressly created for Dacron. After years of intensive research, A.A.P. has successfully perfected a group of new colors offering the fastness properties found most essential in the dyeing and printing of Dacron fabric and yarn.

Dyers, finishers, and printers all are finding that the AMACRONS assure amazing sunfastness, together with excellent resistance to washing and sublimation. AMACRON Dyes may be applied to Dacron either in pressure equipment or in open equipment by conventional methods using carriers as needed. All of the AMACRON dyestuffs are distinctively pleasing as self-shades and mutually compatible in mixtures for the production of mode shades of tan, green, brown, grey or black.

For a free copy of our informative brochure, **Dyeing of Dacron,** and data tailored to your individual requirements, consult our nearest branch. A.A.P. technicians will be happy to arrange a trial run at your convenience.

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MAK

MAK

SPINNING MACHINES

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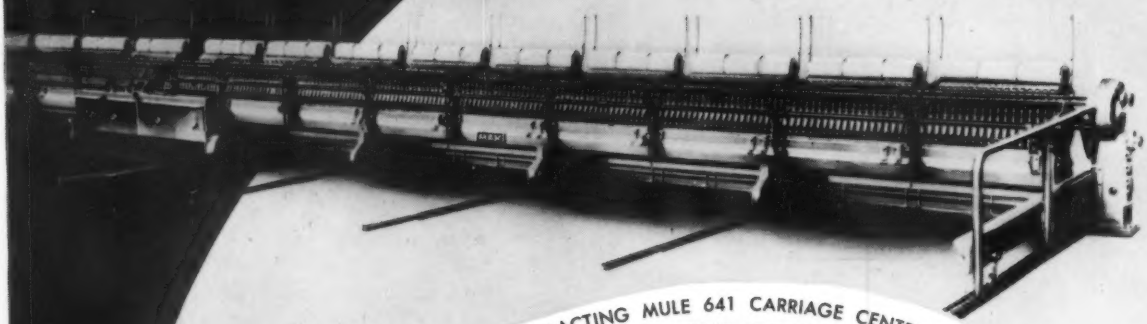
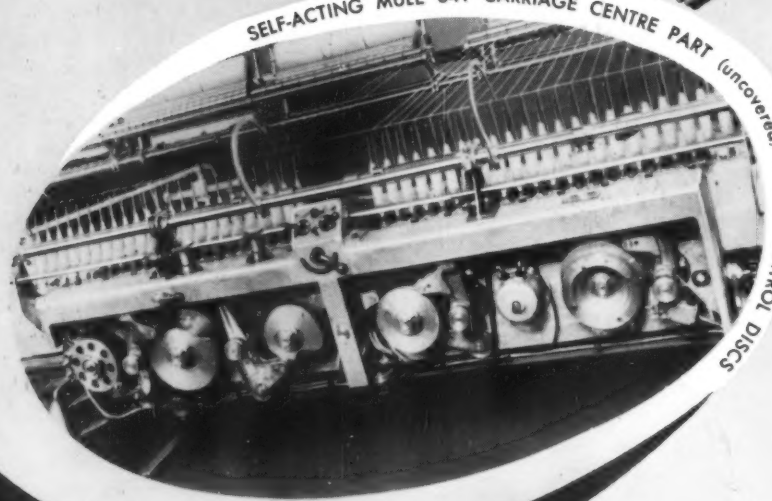
Carding Sets
Self-Acting Mules
Ring Spinning
Frames





SELF-ACTING MULE 641 CARRIAGE CENTRE PART (uncovered) WITH CONTROL DISCS

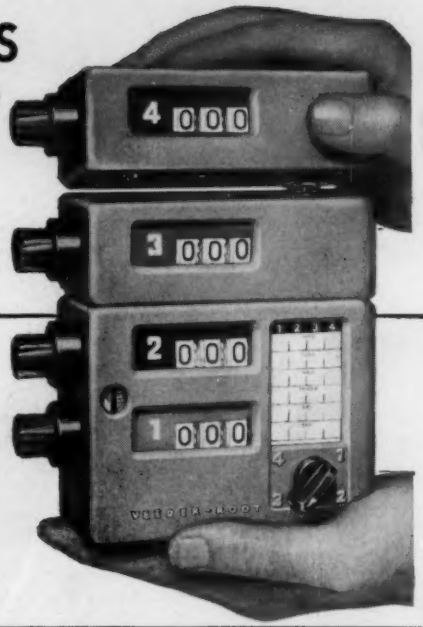
MASCHINENBAU KIEL AKTIENGESELLSCHAFT

KIEL-FRIEDRICHSORT, GERMANY

Every Textile Mill can count on VEEDER-ROOT WITH...

2-3-4 SHIFT CONVERTIBLE COUNTERS

PICK, HANK, YARDAGE and KNITTING



These modern counters have all the features mill men want:

- **EASIER TO READ, reset and maintain.**
- **SHEAR-PIN TYPE OF PROTECTION built into reset knob.**
- **4th UNIT CAN BE ADDED for use as 4-shift counter or as totalizer.**
- **NEW PLASTIC CONNECTION cuts installation time, maintenance costs . . . resists humidity, wear, vibration.**

Here's your Complete V-R "Countrol Package"

ON LOOMS	ON FRAMES
2-3-4 Pick Counters Cut Meters	2-3-4 Hank Counters Predetermining Ctrs.

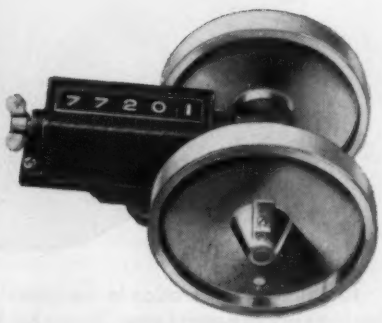
Get this "Countrol Package" on all present and new machines

LOOM CUT METER

Meets the demand of mills for a counting device that will help reduce short lengths and seconds . . . and make possible the sale of guaranteed lengths . . . without cut marks. The Veeder-Root Cut Meter records the lengths of cloth passing over the sand roll, and automatically acts to stop the loom when the predetermined length has been woven.

NEW VARY-TALLY MULTIPLE-UNIT RESET COUNTER

Comes in any combination up to 6 banks high and 12 units wide . . . also in single units with non-skid rubber feet. Easy finger-tip action on big keys makes the Vary-Tally useful in inspection, inventory, and for many other counting jobs throughout the mill where speed and accuracy are needed.



DOUBLE-WHEEL WORM-DRIVEN COUNTER

Records the measurement of cloth in yards, eighths of yards, feet or practically any other linear unit. Friction wheels, one foot in circumference, are finely finished to prevent injuring the most delicate fabric. Rubber (as shown above) and plain finished, wheels supplied on order. Accurate and durable because of ball-bearing shaft-mounting. Reset and Non-Reset Types.

VEEDER-ROOT INC.

HARTFORD 2, CONN. • GREENVILLE, S. C.

"The Name that Counts"

Chicago 6, Ill. • New York 19, N. Y. • Montreal 2, Canada • Dundee, Scotland • Offices and Agents in Principal Cities

Tuffer
TRADE MARK

CARD CLOTHING

Trimmed to Give Full Carding Efficiency

The trimming operation in the manufacture of card clothing is a very important one. It must be RIGHT if top quality production is to be attained.

TUFFER Precision Trimming is one of the major reasons why TUFFER Card Clothing fits the cylinders so smoothly and does such a fine job.

The perfectly-trimmed sides of each TUFFER fillet fit snugly and properly against each other, forming a single unit of clothing that has every point in position . . . and with all the wires having a complete uniformity of height, pitch and angle.

For years hundreds of mills have reordered TUFFER Card Clothing time after time. It fully meets the requirements of those who want the best.

B-4

Manufacturers of Card Clothing since 1866

Tuffer

HOWARD BROS.

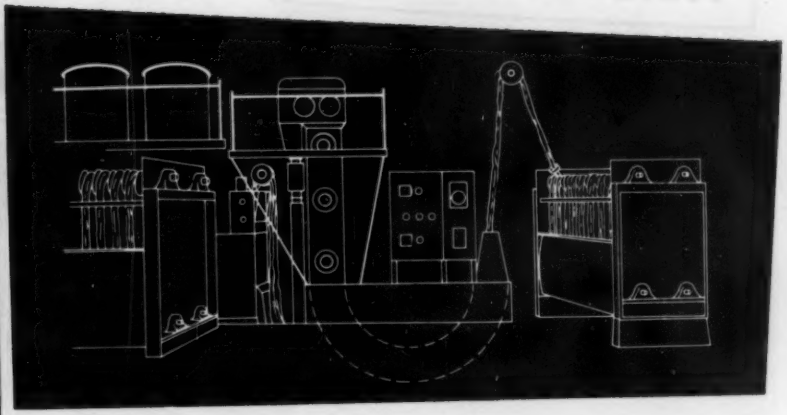
WORCESTER 8, MASSACHUSETTS

Southern Plants: Atlanta, Ga., and Gastonia, N. C.

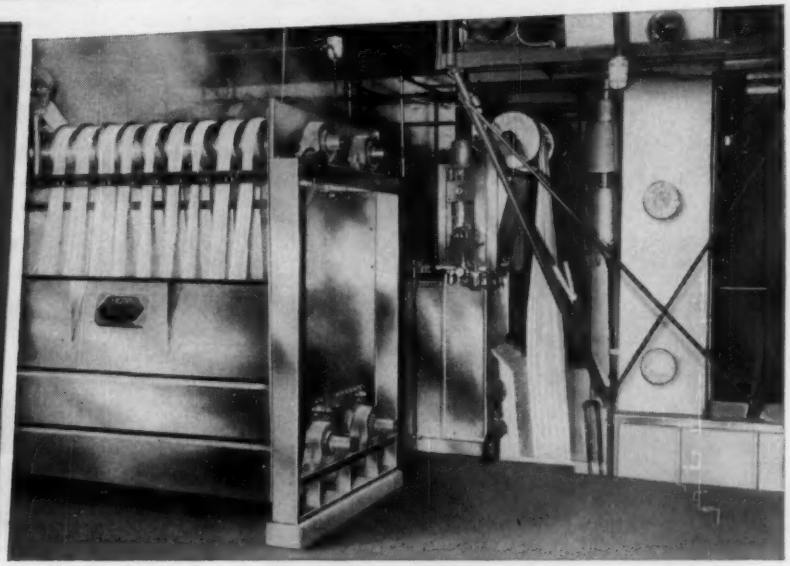
Direct Representation in Canada

TUFFER PRODUCTS Card Clothing for Woolen, Worsted, Cotton, Asbestos and Silk Cards • Napper Clothing, Brush Clothing, Strickles, Emery Fillets. Top Flats Re-covered and extra sets loaned at all plants. Lickerins and Garnet Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plants • Midgley Patented, and Howard's Special Hand Stripping Cards • Top Flat Chains

CONTINUOUS "SINGLE STAGE" BLEACHING



AT BATES MANUFACTURING CO.



Drawing shows U-shaped plan of Rodney Hunt Bleaching Rangette in Edwards Division of Bates Manufacturing Co. at Augusta, Me. Greige washer at left, saturator behind, J-box and heater tube in middle with control panel mounted over loop of the J; white washer at right. The range is operating on the new DuPont "single stage" bleaching system.

Edwards Division of Bates Manufacturing Co., Augusta, Maine, uses a Rodney Hunt Bleaching Rangette* for the DuPont "single stage" continuous processing of soft-filled sheeting.

Rodney Hunt engineers worked closely with Bates and DuPont in adapting this equipment to the "single stage" process. Bleaching operations are conducted in a room only 38′ x 63′. The Rangette is installed on a U-plan, 35′ wide and 19′ long. Almost three-quarters of the room remains for working, drying and storage space.

Rodney Hunt Bleaching Rangettes—in both Becco and DuPont types—can be counted on to deliver the efficiency and quality of a large-size bleaching range in operations up to 1500 pounds per hour; the Rangette bleaches 3-ounce goods at 100 yards per minute and 10-ounce goods at 30 yards per minute. Component units include various sizes of J-boxes, saturators and the notably efficient Tensitrol® washers. Write for Catalog 103 for full details and dimensions.

**Rangette is a trademark of Rodney Hunt Machine Co.*

RODNEY HUNT®

RODNEY HUNT MACHINE CO.
66 MILL ST., ORANGE, MASSACHUSETTS, U. S. A.

QUALITY WET FINISHING EQUIPMENT SINCE 1840

HERE'S PROOF!

New Dayco Thoro-Size Slasher less waste, lower cost

Result of 11 years' intensive research, Dayco slasher rolls greatly improve quality and output of slashing operation.

You'll get *faster, more uniform,* more *efficient* sizing with new Dayco Thoro-Size slasher rolls — and save money in the process. There are many excellent reasons why this is true, as more mills are learning every day.

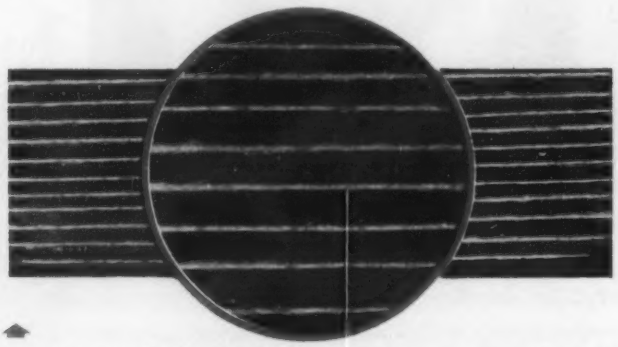
In the main, Daycos do a better sizing job because they're made of new materials and special compounds which give these remarkable slasher rolls a highly resilient surface. A surface that accurately controls the starch sizing solution, within desired limits, when impregnating the warp yarn, thus imparting a cleaner, more consistent uniformity. Waste is eliminated because excess starch is squeegeed back into the tank.

Quality is improved because Daycos are made in one piece and, therefore, will not damage the fibres.

Having no seams, Daycos will not streak, spot or leave roll marks. Also, Dayco Thoro-Size rolls require no soaking or warming-up after week-end shutdowns, nor do they have to be removed when changing sets. This means faster starts and more productive hours of profitable operation.

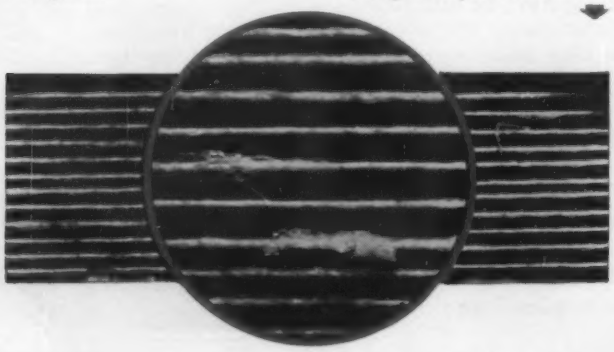
Dayco rolls require no covering — a saving that is multiplied, for the surface can be renewed by grinding for double and triple service life.

For proof of Dayco Thoro-Size slasher rolls' superior performance — just check the photographic facts below. For proof of Dayco *savings* — check your Dayco representative. He'll be glad to help install a Dayco in your mill!



Here is a magnified section of warp yarn sized by new Dayco Thoro-Size slasher rolls. Note clean, uniform appearance throughout.

Warp yarn from the same mill sized by ordinary slasher rolls. Note uneven and irregular sizing along the yarn, denoting inadequate control.



DAYCO Thoro-Size slasher rolls improve quality, reduce costs TEN Ways:

DAYCO THORO-SIZE ROLLS —

- Pay for themselves in 6 months to a year
- Greatly increase the uniformity of sizing
- Retain their resilience, require no covering
- Do not groove, have no seams, leave no roll marks
- Dress the yarn exactly as desired — no harsh surface to add problems
- Reduce waste of sizing when starting new sets
- Do not have to be removed when changing sets
- Are not affected by oils or chemicals
- Embody unusual properties for removing excess starch from warp yarn
- Can be resurfaced for double and triple life

Call your Dayco Representative today or write to Dayton Rubber Co., Textile Division, Dept. 343, 401 S. C. National Bank Bldg., Greenville, S. C.

Rolls offer more uniform sizing,

SALES UP! Because the new Dayco slasher roll gives yarn a brighter, fuller color, a leading mill reports their blue denim cloth is now deep blue instead of grayish blue. Result . . . sales are up and sizing operation costs down!

1905 • 1955

50 YEARS OF PROGRESS

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NEW WOOLEN TEXTILE ACTIVITY IN THE SOUTH!

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NATIONAL SPINNING CO., Washington, N. C.—A spinning mill on worsted yarns and blends, laid out for future expansion to include scouring, combing and dyeing.

IN PRODUCTION

WELLMAN COMBING CO., Johnsonville, S. C.—Now in production, this 150,000 sq. ft. wool combing plant is arranged for expansion to handle 84,000,000 lbs. of wool per year. The Wellman plant is a unit of Nichols & Co., Boston, Mass. The Branch River plant is a unit of Amedee Prouvost of Roubaix, France. These are two of the largest wool processing firms in the world.

IN CONSTRUCTION

New wool combing plant in South Carolina for BRANCH RIVER WOOL COMBING CO. of Woonsocket, R. I. It is Santee River Wool Combing Plant at Jamestown, S. C.; the second totally enclosed, air conditioned plant of its kind in the world, and the second wool combing plant in the South.

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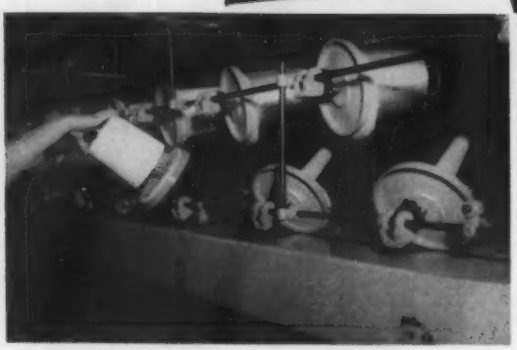
FOSTER-MUSCHAMP

MODEL 66 Automatic Filling Winder

(Made in Westfield, Mass., U.S.A.)

Operating Cost 1/4¢ PER LB. OF YARN QUILLED



Magazine Creel. Cone Holder Swings Out for Donning and Doffing.

Empty Bobbin Ready to Move Into Winding Position. Close Delivery Thread Guide and Feelerless Build.

Compare These Figures with Those for Any Competing Winder

When the magazine creel carries 4 lb. cones and when the machine is equipped with a central bobbin hopper replenisher and automatic pinboarding, or filling box stacker, the operating cost of the Model 66 is as low as ¼c per lb. of yarn quilled. Here is how we arrive at this figure on the basis of quilling 20,000 lbs. of 150 denier rayon in 40 hours.

	Time per Package	*Time for 20,000 lbs*
Creeling in	.25 min.	1250. min.
Piecing up broken ends (1½% breakage)	.11 min.	550. min.
Supplying pinboards	.0488 min.	244. min.
Other duties (5% tot. time)	.024 min.	120. min.
Personal time (5% tot. time)	.024 min.	120. min.
TOTAL TIME (1 operator 40 hrs.)	.4568 min.	2284. min.*

*Note there are 2400 minutes in 40 hours.

Standard hourly rate of 1 operator times 40 hrs. divided by 20,000 equals $.0025.

Exceptionally low operating cost is only one of 8 POINTS OF SUPERIORITY which Foster-Muschamp Model 66 offers. Learn about the other 7 points. Write for FOSTER FACTS — Volume 4 — Number 5.

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A Winder for Every Textile Purpose

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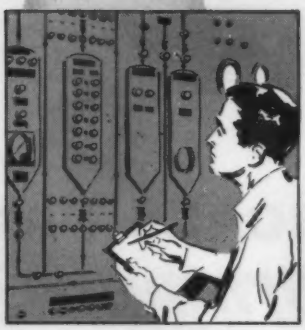
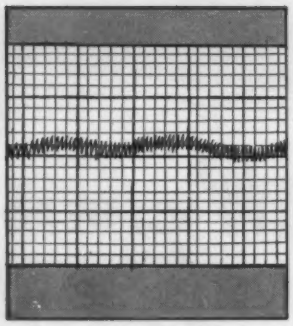
A SUPERBLY CLEAN PEARL STARCH

Put Globe Brand Pearl Corn Starch to the test. We know you'll be happy with the clean, clear size it makes. Globe Pearl Corn Starch is always available in the quantities you desire.



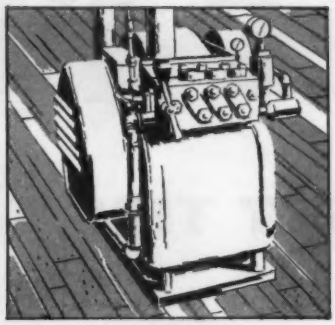
CONTROLLED UNIFORMITY

Globe Brand Pearl Corn Starch is made under exacting plant and laboratory controls. Each batch will meet your exacting specifications. This thick-boiling starch is ideal for warp sizing carded yarns.



VISCOSITY STABILITY

Globe Brand Pearl Corn Starch performs perfectly in the sizebox, producing a smoother, tougher size, giving a yarn with greater strength and reduced shedding.



IDEAL FOR HOMOGENIZERS

A special Globe Brand Pearl Corn Starch has been developed for homogenizers. It homogenizes to a uniform end-product, clean and stable, making a size that produces a better sized warp.

• Take advantage of our free technical and laboratory service. Send your specific production problems to us. We welcome the opportunity to serve you.

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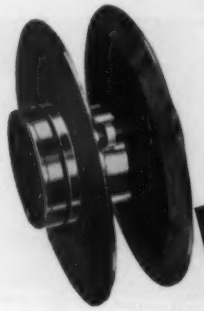


American Adjustable-Diameter Sheaves feature patented, double-taper hub which locks sheave to shaft, flanges to hub for powerful wedge-grip on the shaft. Flanges move simultaneously for perfect V-belt alignment. Entire unit is dynamically balanced for smooth operation. Adjusts to any pitch diameter in seconds.

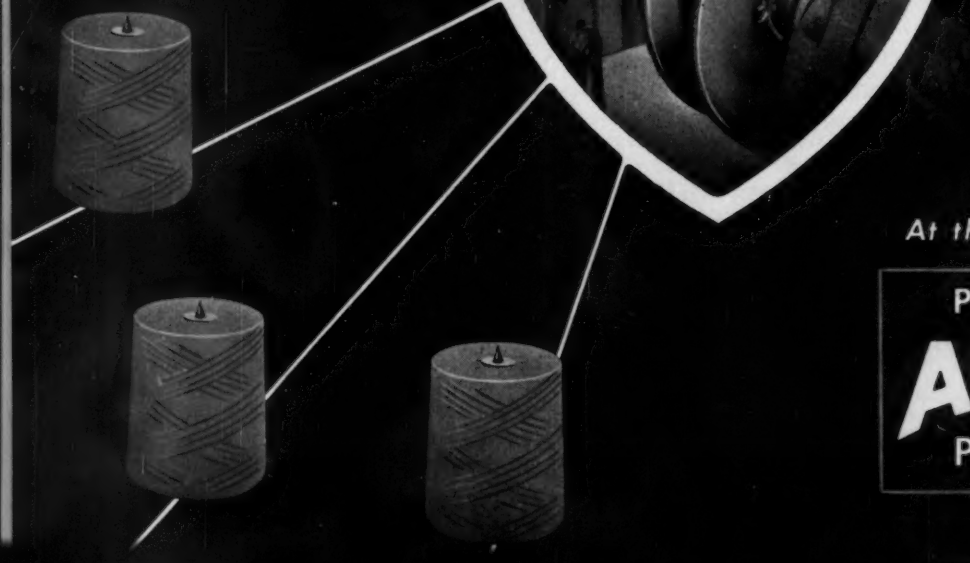
Profit or loss? It's the heart of the machine that makes the difference

Probably no other manufacturing operation is so sensitive to speed variation as textile processing, where a 1% speed change often means the difference between profit and loss.

Belt-slip and creep, changes in pitch line under full load, differences in actual motor speeds from rated speeds and other variables can cause speed changes as high as 11% or more, on V-belt drives.

Best answer to the problem is simple, obvious, logical—an American Adjustable-Speed V-belt Drive. These drives permit fast, easy speed changes up to 100% by a simple screw adjustment which changes the pitch diameter of the drive sheave. No pulley switching, no expensive transmissions, little down-time is involved.

You'll find no more economical—or efficient—method of adjusting textile machinery to the one *right* speed for every process than American Adjustable-Speed Drives. See your distributor today or write for full details without obligation. The American Pulley Company, 4226 Wissahickon Ave., Philadelphia 29, Pa.



At the Profit End of the Machine

Power Transmission by

AMERICAN

PULLEY COMPANY

AIM* for the best in production line packaging with new Acme Steel Strapping Machines

Acme Idea Man J. H. Scott Birmingham, Ala. helped Pepperell with this packaging idea

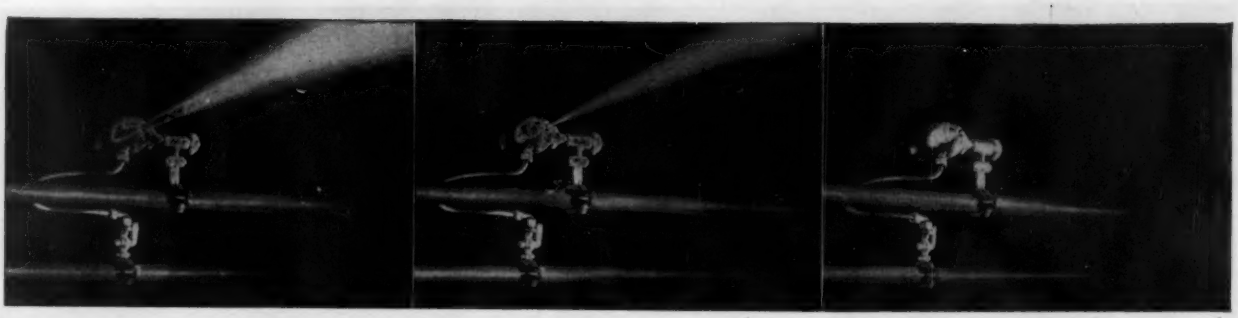
ask your *Acme Idea Man to help solve your problems

Pepperell Manufacturing Company, one of the country's leading textile manufacturers, is enjoying new production efficiencies and economies with this new Acme Steel F3 Automatic Strapper. (Idea No. 438.) *One* operation applies three straps simultaneously with the proper degree of compression, weighs and directs the flow of cartons on a motorized conveyor. Packages are uniform in appearance, straps are placed accurately, and because of uniform compression, they are easier to tier for warehousing. Contents of cartons are safe and secure . . . pilferage and shipping damage are minimized.

This is the type of progressive engineering and forward thinking your Acme Idea Man can offer you. Why not consult with him—let him analyze your present packaging and shipping methods? Call him at the nearest Acme Steel office, or write Acme Steel Products Division, Acme Steel Company, Dept. EE-35, 2840 Archer Avenue, Chicago 8, Illinois.

AIM *For Safe, Lower-Cost Shipping*

ACME STEEL



"I want my humidifier heads to keep running whenever humidification is needed," says a mill executive —

Good idea, of course. That's why he likes GRADUMATICS.

Output is controlled automatically to maintain a constant humidity at all times.

Operating with both air and water under pressure, GRADUMATICS are more efficient than gravity type atomizers. Use less air. "Atomization" of moisture is more complete, resulting in quicker evaporation, and longer "blow" of the resulting *vapor*. Excellent performance at all evaporative outputs from 2 to 16 pounds of water per hour.

No other system approaches the GRADUMATIC in uniformity of resulting humidity and in economy of operation at high capacity. Good economy and even better spray quality when operating at low evaporative output.

There are other advantages too. For example the GRADUMATIC head is made non-adjustable. No guess-test required. You *know* it's right. And with both air and water under pressure, frequent self-cleaning is quite unnecessary.

Simple? Just look at the few parts. Repairs are a cinch, and seldom needed.

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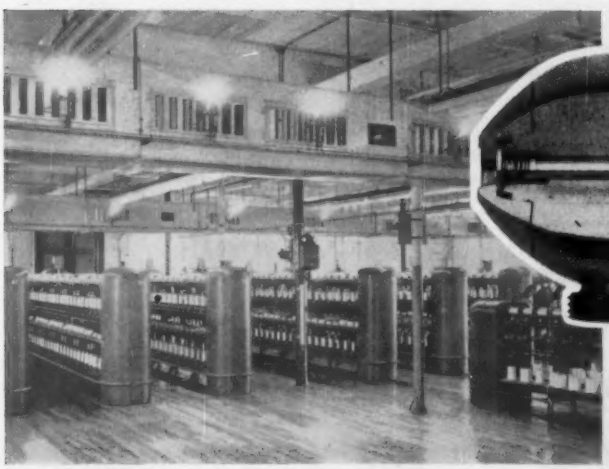
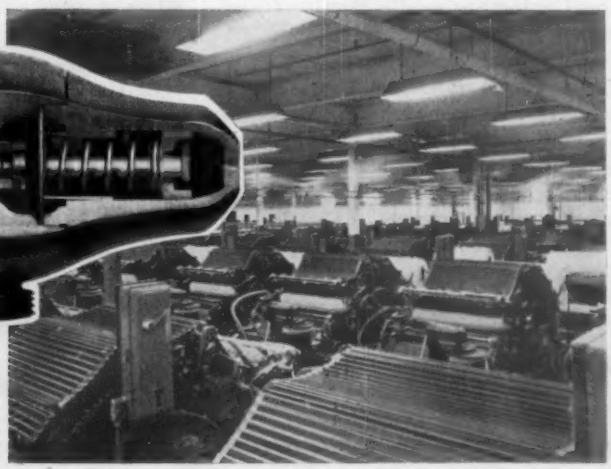
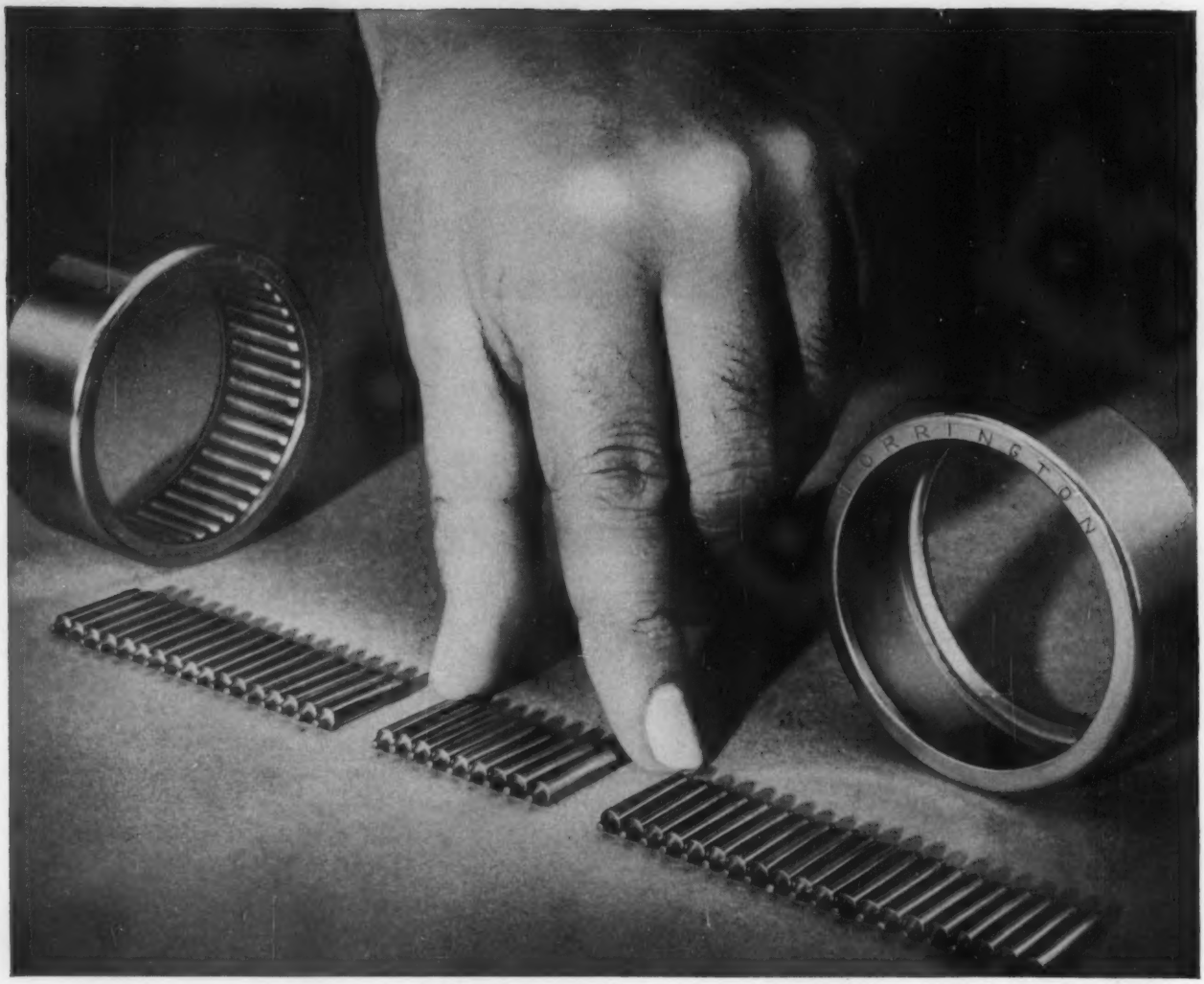
Humidifying and Air Conditioning Since 1904
Traveling Cleaner Systems Since 1926

With Airchanger, or as boosters for Central Station System



For direct humidification in all textile mill departments





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The radial load capacity of an anti-friction bearing depends, in the final analysis, on the number of lines or points of contact made by the bearing surfaces in the load zone. This is where the Torrington Needle Bearing really shines.

With its full complement of precision-ground rollers, the Needle Bearing gives many more lines of contact than other types of anti-friction bearings. Thus for a given size, the Needle Bearing has a *greater* radial load capacity than other bearings.

What does this do for your product? The Needle Bearing can give you the benefits of its high-capacity performance for little more than the cost of a plain bearing; it can help you reduce the size and weight of surrounding members without sacrificing shaft strength, thickness or rigidity.

For twenty years, our Engineering Department has helped designers and manufacturers throughout industry to adapt the unique advantages of the Needle Bearing to their products. Let us help you make the Needle Bearing "standard equipment" in yours.

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TORRINGTON *NEEDLE* **BEARINGS**

Needle • Spherical Roller • Tapered Roller • Cylindrical Roller • Ball • Needle Rollers

These features make the **TORRINGTON NEEDLE BEARING** *unique*

- low coefficient of starting and running friction
- full complement of rollers
- unequalled radial load capacity
- low unit cost
- long service life
- compactness and light weight
- runs directly on hardened shafts
- permits use of larger and stiffer shafts

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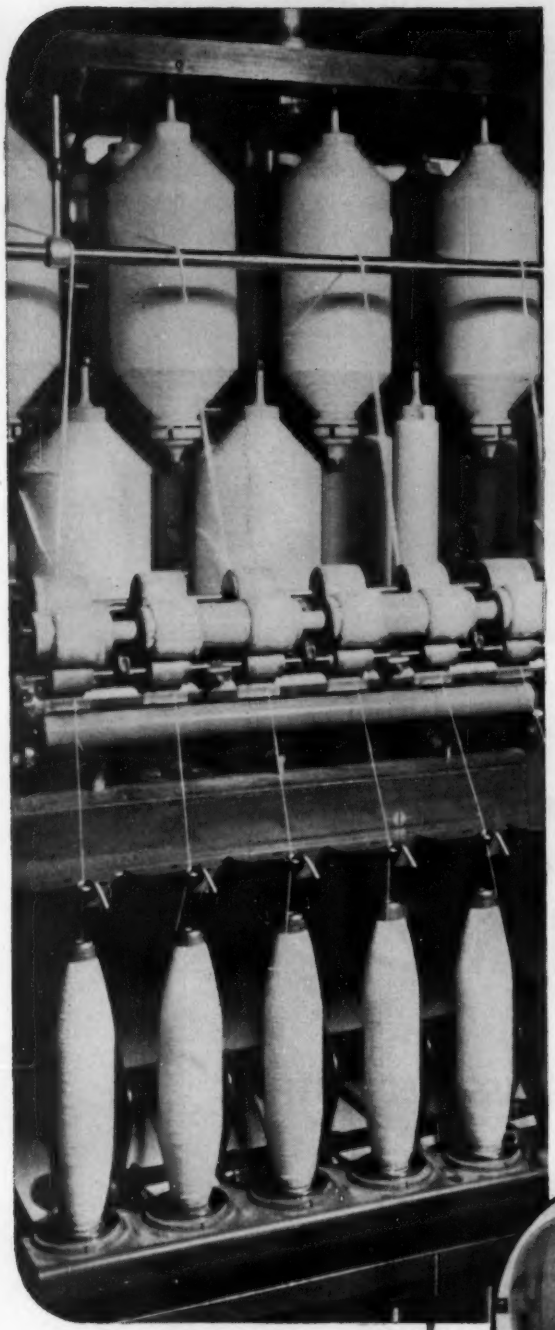


Only WHITIN SUPERFLEX Spinning Frames provide...

- Wide Range of Traverse
- Super-Draft System
- Top Quality Product
- Low Operating Cost

TRAVERSE To provide mills with complete flexibility for present or future conditions, the Whitin Superflex Spinning frame has a traverse range of 8" - 11". The frame can be easily set at intermediate positions in the mill. This feature allows mills to take maximum advantage of its spinning frames to produce the most economical sized package.

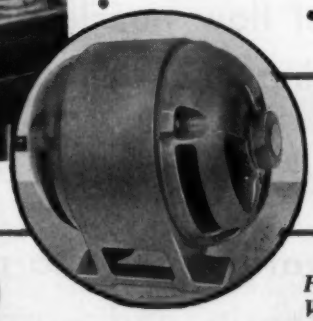
SUPER-DRAFT° The two apron drafting system, developed, perfected and used by Whitin for twenty-two years, is recognized as outstanding for fiber control and drafting performance. Highly flexible in range of drafts, it is easy to clean and to operate. Reports from mill after mill show that yarn quality is excellent — higher than ever before.

LOW OPERATING COST Whitin-Climax Ball Bearing Top Rolls and Whitin-Cleandraft non-lubricated middle and back top rolls banish oil from drafting zone, reduce picking and cleaning by 96 per cent, lower direct spinning expense and assure minimum operating cost.

OTHER FEATURES

- Easily accessible creel
- Spring counterbalanced ring rail
- Unsurpassed quality case-hardened bottom rolls
- Precision manufacture

°TRADE-MARK REG.



LOW POWER CONSUMPTION

The standard textile motors used keep installation, power consumption and maintenance costs at a minimum.

For detailed information write to Dept. D Whitin Machine Works, Whitinsville, Mass.

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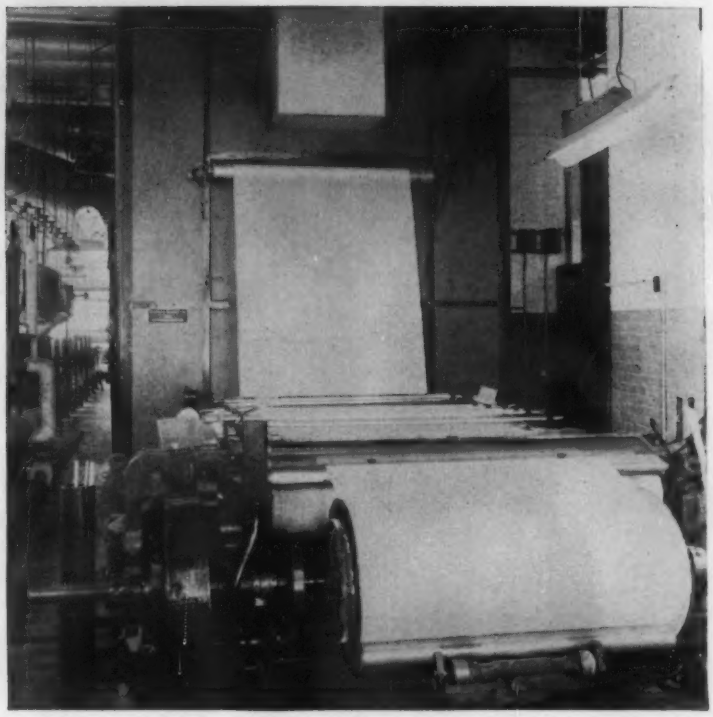
AT LESS COST



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PROCTOR *Par Flow* HOT AIR SLASHER *Dryer*

INCREASED PRODUCTION IS ASSURED WITH

- Patented parallel flow nozzle ducts which prevent warp tangling and rolling.
- Complete accessibility for easy cleaning.
- Availability in various sizes to meet plant requirements in capacity and warp width.

PROCESSING MACHINERY FOR FIBERS AND BLENDS

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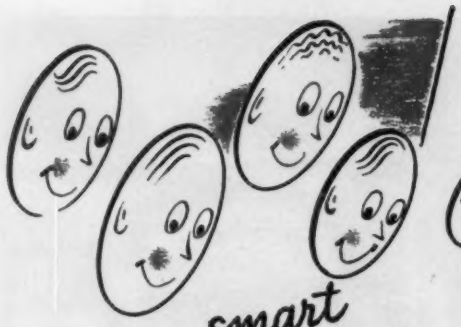


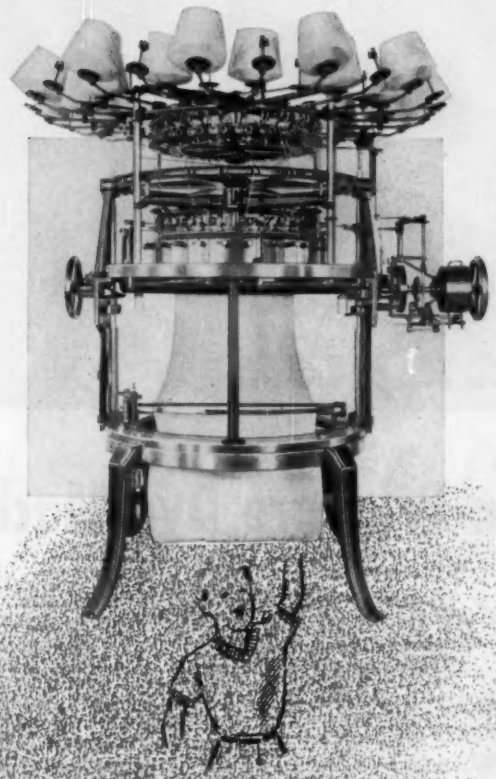
To merchandisers who are sales-conscious!

smart all ^ eyes are on . . .

THE

WILDMAN

INTERLOCK MACHINE



Here is an unusually versatile machine that can spark your sales effort — any day.

TODAY is a good time to start thinking about equipment that has proven its efficiency in the production of outerwear, underwear, dress fabrics, sportswear. It is set up to handle many types of fabrics and its special size frame is built to process exceptionally wide fabrics.

Inquire today about the WILDMAN INTERLOCK MACHINE. Available in all popular sizes 15″ to 30″ and furnished in all cuts 8 to 24 needles per inch. Belt or individual motor drive.

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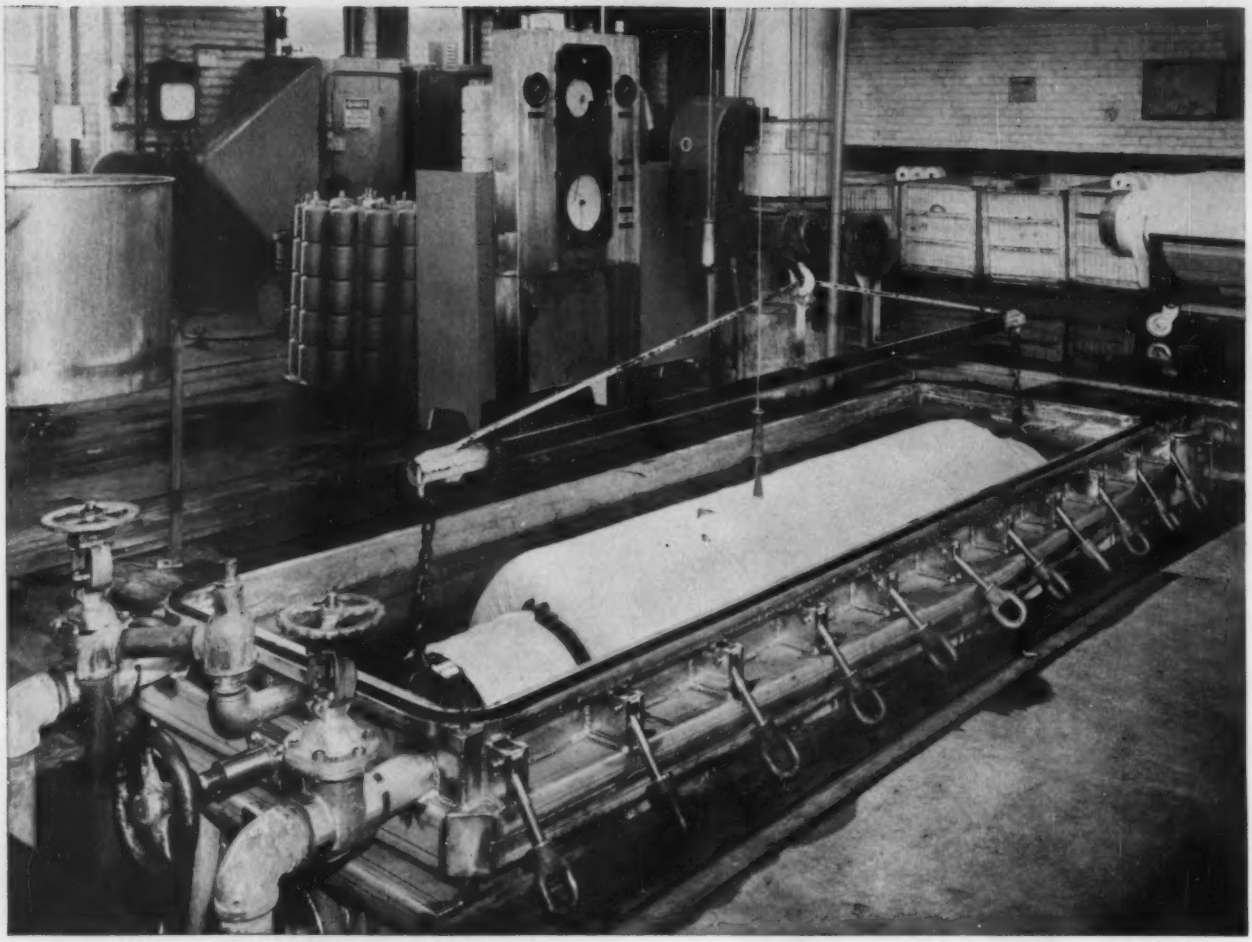
MANUFACTURERS OF: FULL FASHIONED HOSIERY MACHINES; CIRCULAR MACHINES FOR OUTERWEAR, UNDERWEAR, SPORTSWEAR, TRIMMINGS; STOP MOTIONS



Taylor controlled Burlington Pressure Dye Machine installed at *Munsingwear, Inc.*

PICTURED ABOVE is a new Burlington Pressure Bleach, Boil-off and Dye machine recently purchased by Munsingwear, Inc. for use on tricot, and other knitted and open weave fabrics. With liquor being circulated through the machine at the rate of 1,500 gallons per minute the control of temperature and pressure is all important.

The Taylor Time-Schedule Temperature Controller automatically regulates rate of rise, hold time and temperature according to a predetermined ideal schedule. Pressure gages on either side of the controller indicate inside-out and outside-in pressures.

The Taylor control system saves money in at least four important ways:

1. It puts the whole process beyond the hazards of manual operation and human memory.

2. It assures a uniformly dyed product.

3. It makes possible a range of colors hitherto extremely difficult to obtain.

4. It saves labor through less material handling and shorter dyeing time.

When it comes to automatic control systems for dyeing, whether it's beam, piece, skein, package or top, Taylor engineers have the experience and the know-how based on many years of successful application in the Textile industry. Call your Taylor Field Engineer for practical advice and complete details. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

Taylor Instruments
MEAN
ACCURACY FIRST
IN HOME AND INDUSTRY

water is costly!

squeeze it out of your resin production picture with

U.F. Concentrate–85

U.F. Concentrate–85 is the highest concentration of liquid formaldehyde commercially available... 59% formaldehyde and 26% urea in a water solution!

. . . Here are 4 big reasons why you should use U.F. Concentrate–85 for the synthetic resins used in making molding powders, textile finishes, surface coatings, adhesives and special papers:

- **Increase** production in shorter time with existing equipment.
- **Reduce** processing time for dehydration.
- **Charge** larger batches to kettles.
- **Save** storage, handling and shipping costs.

This is another of the efficient process chemicals provided by the more than 60 years of research, experience and know-how that stand behind all Nitrogen Division products.

For full information and free folder on U.F. Concentrate–85, or other formaldehyde solutions, *write today!*

THREE OTHER HIGH PURITY FORMALDEHYDE SOLUTIONS

...for a variety of applications

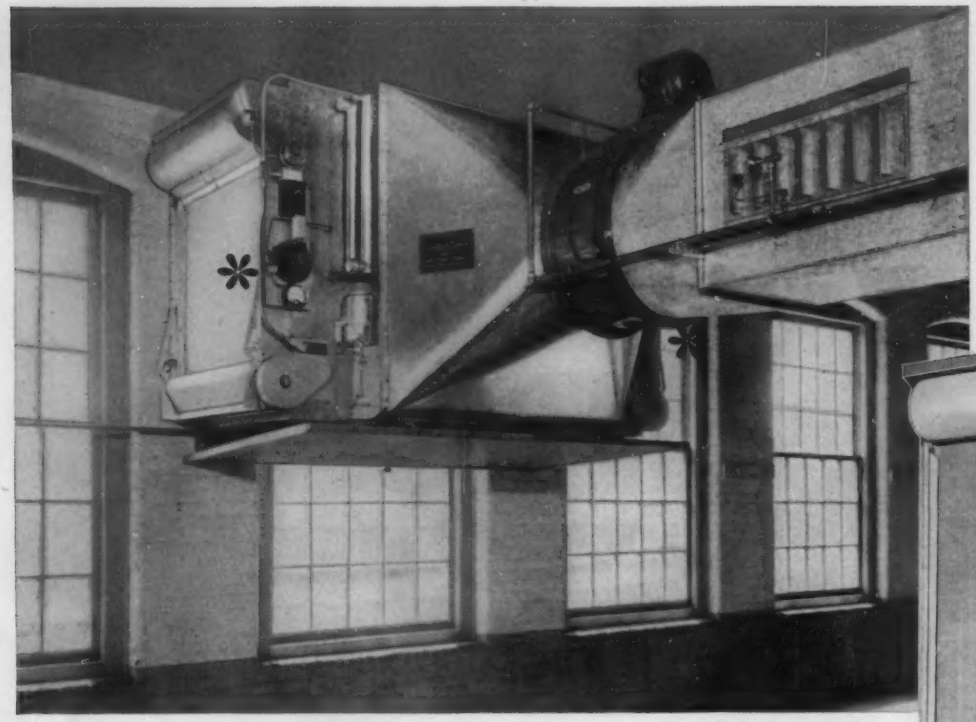
Inhibited	Low Methanol
37%..Formaldehyde...	37% & 45%
7%....Methanol	1.5%
3.5.....pH	3.5

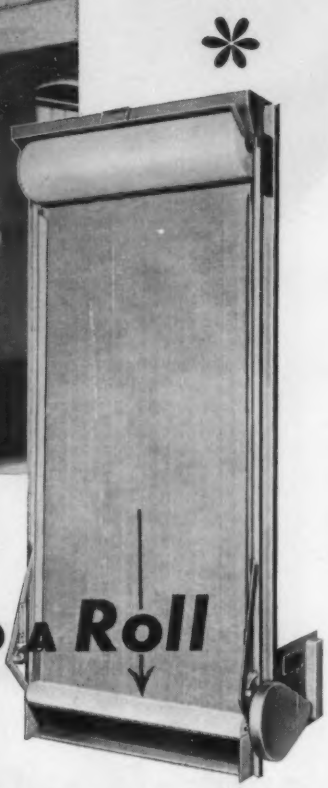
As with all Nitrogen Division Products, these exceed the specifications of most industrial users.

NITROGEN DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.
Hopewell, Va. • Ironton, Ohio • Orange, Tex. • Omaha, Neb.

Anhydrous Ammonia • Ammonia Liquor
Ammonium Sulfate • Sodium Nitrate
Urea • Ethylene Oxide • Ethanolamines
Ethylene Glycol • Diethylene Glycol
Methanol • Formaldehyde
Nitrogen Tetroxide
U. F. Concentrate–85
Nitrogen Solutions
Fertilizers & Feed Supplements

For more information, write direct or use Reader Service post card.





Auto-AIRMAT

BUNDLES LINT PROBLEMS INTO A *Roll*

Parks-Cramer Airchanger System cleans recirculated air automatically with AAF Auto-AIRMAT Filter

THE Parks-Cramer Airchanger System has established a better "working climate" for materials, machinery and operatives in textile mills. A "must" for its efficient operation, in many installations, is the removal of lint from the re-circulated air. Under these conditions, ordinary screens placed over the return air openings quickly become clogged, and present a maintenance problem.

How Parks-Cramer solved the problem is pictured above. AAF AUTO-AIRMAT Filters are installed in the recirculated air opening on each side of the Airchanger unit. Now, when the lint load builds up to the danger point, the filter automatically cleans itself—and bundles up the collected material for later disposal.

AUTO-AIRMAT operation is as simple as it is effective. The AIRMAT media, installed in roll form at top of unit, becomes a moving filter curtain that is re-rolled at bottom with its lint load. Movement of curtain is entirely automatic, with clean media being introduced only in sufficient quantity to lower resistance below the established maximum.

Let us show you how easy and economical it is to *bundle your lint problems into a roll*. For complete information, call your nearby AAF representative or write for AUTO-AIRMAT Bulletin 234.

AAF

herman nelson

American Air Filter

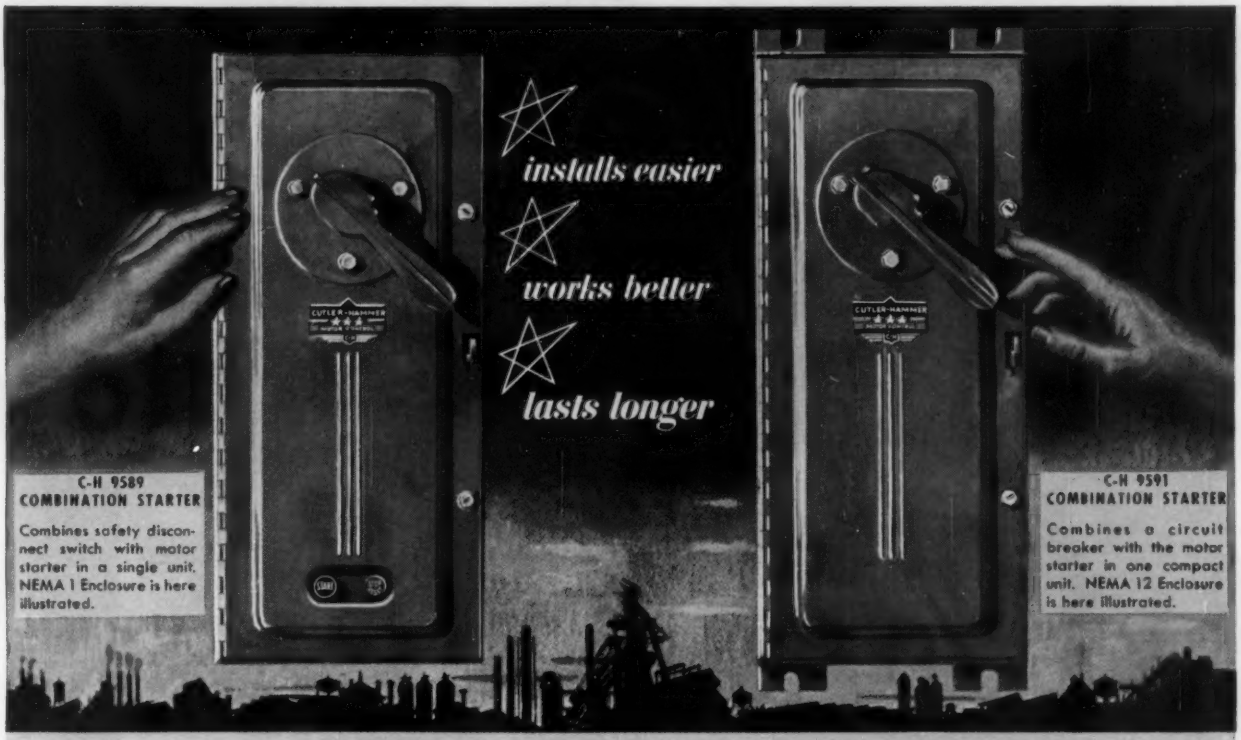
COMPANY, INC.

American Air Filter of Canada, Ltd., Montreal, P. Q. • 304 Central Avenue, Louisville 8, Kentucky

For more information, write direct or use Reader Service post card.

WHAT'S NEW IN MOTOR CONTROL? ★ ★ ★ GET IT FIRST IN CUTLER-HAMMER

New Combination Starters in the Spectacular Line of Cutler-Hammer ★★★ Motor Control

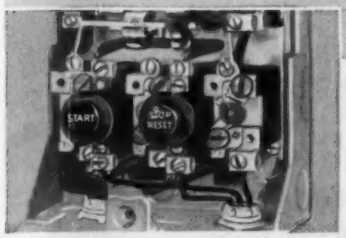

installs easier
works better
lasts longer
C-H 9589
COMBINATION STARTER
Combines safety disconnect switch with motor starter in a single unit. NEMA 1 Enclosure is here illustrated.
C-H 9591
COMBINATION STARTER
Combines a circuit breaker with the motor starter in one compact unit. NEMA 12 Enclosure is here illustrated.

Users have had many dramatic proofs of the advantages built into Cutler-Hammer ★ ★ ★ Motor Control. They *know* the three silver stars on the Cutler-Hammer nameplate identify control equipment that sets three entirely new standards of motor control performance and value. Star #1: Amazing savings in installation costs which often exceed the cost of the control. Star #2: Performance so uniform and dependable that *this* control often saves many times its cost by the production interruptions it avoids. Star #3: Life so greatly increased that this control *never* requires maintenance expense in 90% of its uses.

Now combination starters are available in this spectacular new line of Cutler-Hammer ★ ★ ★ Motor Control. Your nearby Cutler-Hammer Authorized Distributor has been stocked and is ready to serve you. Bulletin 9589 Starters incorporate a rugged disconnect switch of advanced design with or without fuses. Bulletin 9591 Starters are equipped with circuit breakers. Order *now* for prompt delivery.

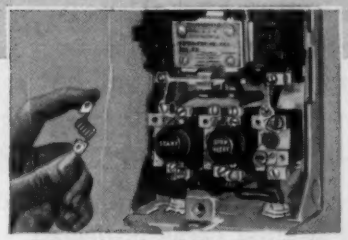
CUTLER-HAMMER, Inc., 1457 St. Paul Avenue, Milwaukee 1, Wisconsin.

CUTLER-HAMMER
★ ★ ★
MOTOR CONTROL
C-H



Full Three-Phase Protection

Only *three* overload relays can give complete three-phase protection to avoid motor burn-outs and their costly interruptions to production. And *only* Cutler-Hammer offers this complete three-phase protection in standard combination starters. You pay only for the third relay, nothing extra for special engineering or special enclosures.



Adjustable Load Sensing Coils

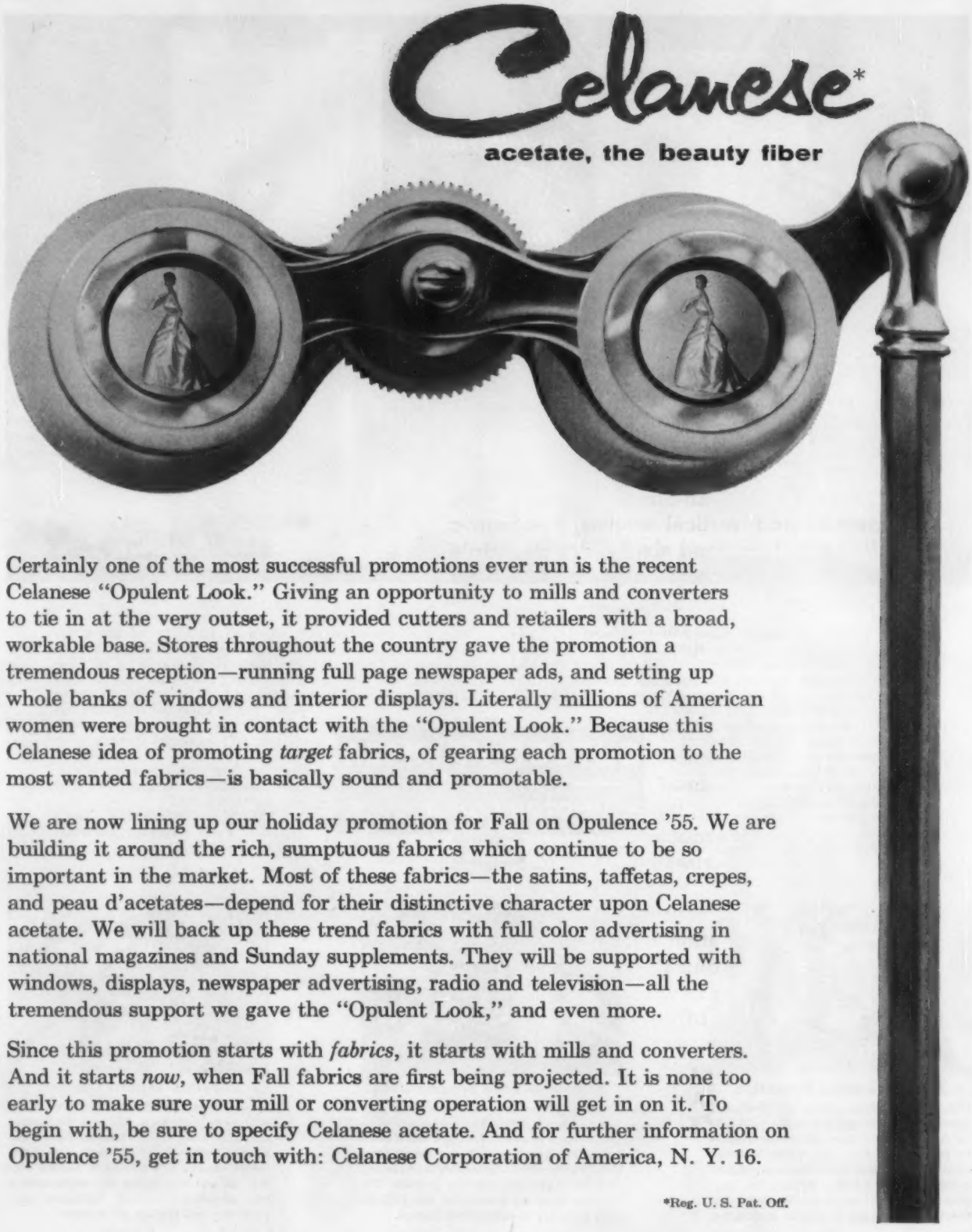
The accurate adjustment of overload protection permits motors to work harder without damage to motor windings. This is more important than ever with the newer type small frame motors. Adjustable load sensing coils in these new starters provide 3% loading accuracy instead of the 10% to 12% accuracy in competitive control.

Superlife Vertical Contacts

Experienced control users insist on dust-safe vertical contacts. And now the famous Cutler-Hammer vertical contacts have been doubly improved. First, their new lightweight design cuts bounce to reduce arcing. Second, any arcing that might occur is now pressure-quenched. Compare performance and see the difference.

For more information, write direct or use Reader Service post card.

Celanese now lining up Fall promotion of Opulence '55



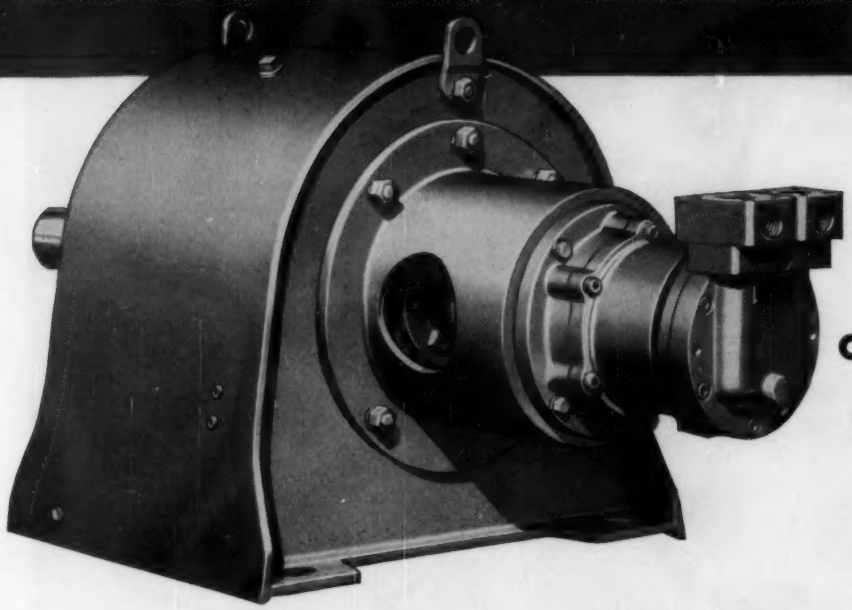
Certainly one of the most successful promotions ever run is the recent Celanese "Opulent Look." Giving an opportunity to mills and converters to tie in at the very outset, it provided cutters and retailers with a broad, workable base. Stores throughout the country gave the promotion a tremendous reception—running full page newspaper ads, and setting up whole banks of windows and interior displays. Literally millions of American women were brought in contact with the "Opulent Look." Because this Celanese idea of promoting *target* fabrics, of gearing each promotion to the most wanted fabrics—is basically sound and promotable.

We are now lining up our holiday promotion for Fall on Opulence '55. We are building it around the rich, sumptuous fabrics which continue to be so important in the market. Most of these fabrics—the satins, taffetas, crepes, and peau d'acetates—depend for their distinctive character upon Celanese acetate. We will back up these trend fabrics with full color advertising in national magazines and Sunday supplements. They will be supported with windows, displays, newspaper advertising, radio and television—all the tremendous support we gave the "Opulent Look," and even more.

Since this promotion starts with *fabrics*, it starts with mills and converters. And it starts *now*, when Fall fabrics are first being projected. It is none too early to make sure your mill or converting operation will get in on it. To begin with, be sure to specify Celanese acetate. And for further information on Opulence '55, get in touch with: Celanese Corporation of America, N. Y. 16.

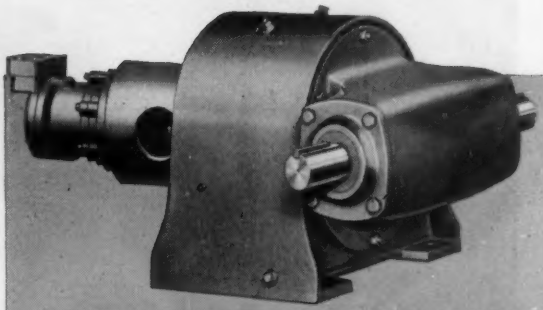
*Reg. U. S. Pat. Off.

NOW! NEW OILGEARDUCERS



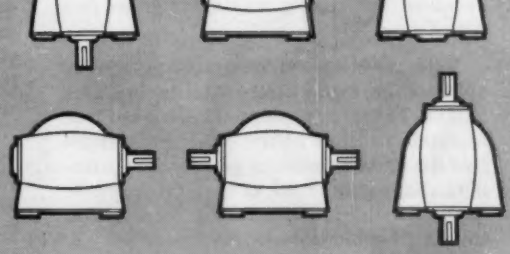
Offering for the first time compact, packaged, fluid power output drive units!

● Oilgearducers are new integral output drive units combining Oilgear Fluid Power axial piston motors and Falk All-Steel Reducers. There are horizontal and vertical models, concentric and right angle types and single, double, triple and quadruple reduction. Now, for the first time you can get a complete, easy to install, "ANY-SPEED" output unit for your high torque, low maximum speed drives. When used in combination with Oilgear Fluid Power Pumps, these reversible Oilgearducers provide infinite variability of speed, absolutely controlled rate of acceleration and deceleration, smooth and swift reversal, cushioned braking. All these together with major economies in motor, circuitry and power requirements. This new Oilgearducer "Any-Speed" output unit is available in sizes from 1 to 20 h.p. It is unequalled for applications as diverse as can-filling, paper machines, centrifugals, cable wrappers . . . and in automation or feed back applications where synchronization is an absolute necessity. Write now for new bulletin 56610. THE OILGEAR COMPANY, 1577 West Pierce Street, Milwaukee 4, Wisconsin.



RIGHT ANGLE OILGEARDUCERS

Oilgearducers with right angle output shafts are available in ratios ranging from 5 to 1500: 1. In assemblies shown below.



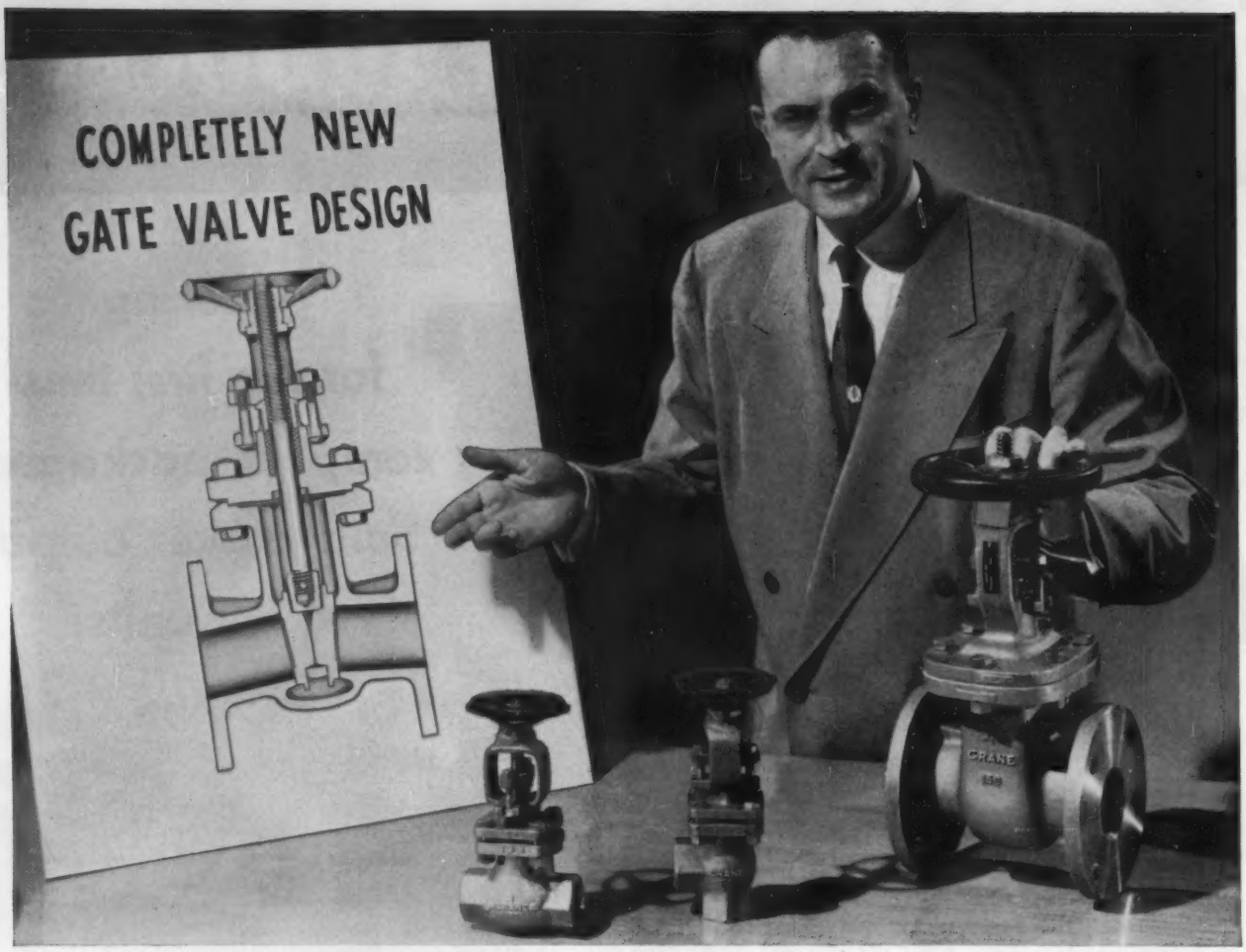
Write for this new Bulletin 56610

OILGEAR

OILGEAR

PIONEERS...NOW THREE PLANTS FOR FLUID POWER

PUMPS, MOTORS, TRANSMISSIONS, CYLINDERS & VALVES



New CRANE Corrosion-Resistant Valves in 18-8 SMo and Craneloy 20

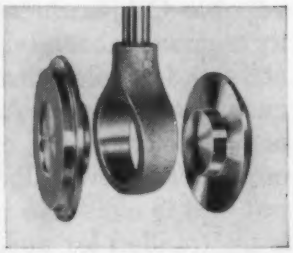
Gate, Globe and Angle Patterns

Few valves for process industries have ever received the quality treatment given this new Crane line.

Note, for instance, the unique yet simple split-wedge disc construction in the gate valves. Those dual identical discs are free to rotate in their holder—the most effective design for resisting galling. The trunnion shape at the back of each disc assures even distribution of closing forces. You couldn't buckle them if you tried.

The globe and angle valves give equally outstanding control of corrosive fluids. A new type disc-stem connection, with minimum clearances, practically eliminates vibration. By placing seating load closer to seats, it provides easier, more accurate closure.

Throughout, these valves are built for better service in your choice of Crane 18-8 SMo Stainless Steel or Craneloy 20. Both lines come with screwed or flanged ends. Full information given in circular AD 2059—available from your Crane Representative or on request to address below.



New split-wedge disc in gate valves combines the benefits of free rotation with uniform seat load pressure.

CRANE CO.

General Offices: 836 S. Michigan Ave., Chicago 5, Illinois
Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

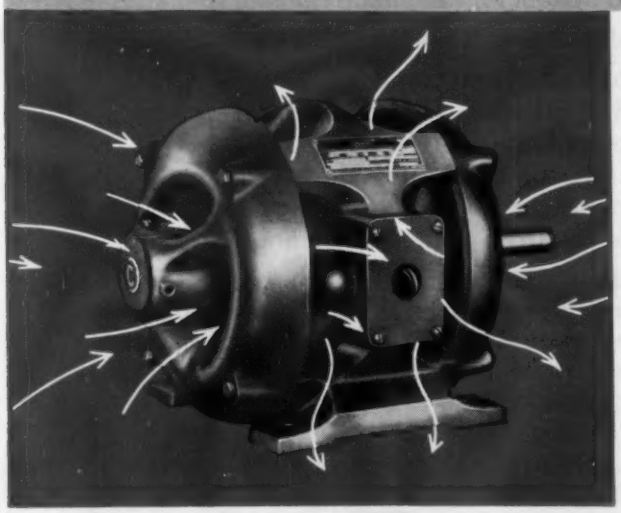
CRANE'S FIRST CENTURY . . . 1855-1955

For more information, write direct or use Reader Service post card.

Lint Won't Stop

Century® Performance Rated® Textile Motors

- Lint, dust and other foreign matter are easily blown through the smooth, large, clean air passages.
- In lint-filled atmospheres, these motors stay clean, operate at normal temperatures. Bearings and windings are kept cool by large-capacity fans.
- Because they are Performance Rated to fit your job, Century Textile Motors deliver stand-out dependability year-in, year-out.
- Always specify Century Performance Rated Textile Motors.



Specify Performance Rated®

Century Motors!

Century makes a complete line of Performance Rated motors for important jobs in your mill. Power range from ⅛ to 400 H. P. . . . in a wide variety of types including drip proof, splash proof, totally enclosed and explosion proof. Selective speed drives 1 to 150 H. P.

CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

Century C MOTORS

843

NEW... AMERICAN MONOTRACTOR for Automatic Handling

The NEW American MonoTractor will fit precisely into any overhead handling system for automatic transfer of materials.

This new unit offers these advantages:—

1. Duti-Rated Life Time Gearing.
2. Speed Range from 35 to 350 F. P. M.
3. Horsepower Range for ¼ to 2 H.P.
4. Any Standard NEMA Motor.
5. Any Type Motor Brake Can Be Applied.
6. Operates on Any Smooth Flat Flange Track.

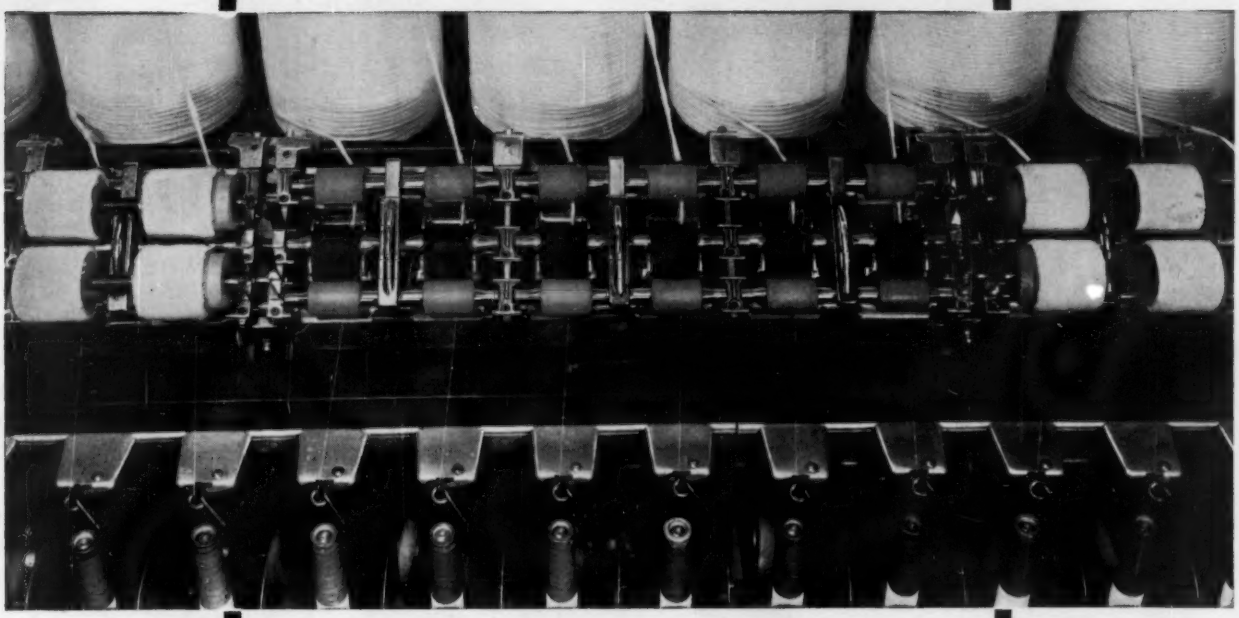
This precision built tractor unit offers continuous trouble-free transfer of any type of carrier for power propulsion. American MonoRail engineers offer wide experience in the application of these units. Let them help you solve your automatic handling problems.

AMERICAN OVERHEAD HANDLING EQUIPMENT

AMERICAN MONORAIL COMPANY

13108 ATHENS AVENUE • CLEVELAND 7, OHIO

[IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.]



OVER 1½ MILLION SPINDLES NOW EQUIPPED WITH ROBERTS HIGH-DRAFT

Partial or Complete Drafting System Changeovers

High-Draft Cradles & Pins
No-Oil Cap Bars
Fully Adjustable Roll Stands
Hardened Draft Gearing
Gear Covers
Weight Levers & Lever Screws
Case Hardened Top Rolls
No-Oil Saddles
Case Hardened Bottom Rolls
Revolving Clearers
Traverse Motions
Weight Bells & Weight Wires

Roberts Company not only supplies drafting system changeovers but modernizes the complete spinning frame as well. Samsons do not wear out. Get new spinning performance at half the cost.

ROBERTS COMPANY

Sanford, North Carolina, U. S. A.

For more information, write direct or use Reader Service post card.

A SHORT GUIDE TO BETTER FINISHING

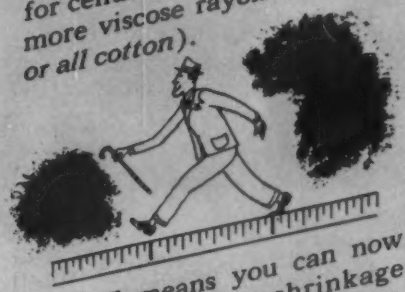
by

ONYX

OIL & CHEMICAL COMPANY

LIFE-OF-THE-FABRIC SHRINK-PROOFING FOR RAYON AND COTTON

You can be sure . . . your shrinkage is set with CET, the amazing new stabilizing agent for cellulosic fabrics (50% or more viscose rayon or cotton, *or all cotton*).



CET means you can now achieve absolute shrinkage control and wrinkle resistance on such fabrics through an indefinite number of commercial launderings, with no or negligible loss of tensile strength.

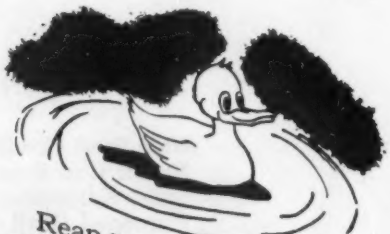
Easy formulation and application of water-soluble CET are only two of its many advantages. CET also will not resinify, or embrittle and stiffen like ordinary resin treatments. It is compatible with hand-modifying finishes; it can be applied on conventional equipment.

Nothing speaks better for CET than a mill demonstration. Ask for yours today and remove all doubts on shrinkproofing your cellulosic fabrics. The Onyx Technical Service Representative will be glad to assist you, without obligation.

LIFE-OF-THE-FABRIC WATER REPELLENCY FOR ANY FABRIC

A high quality silicone-based water repellent that offers the maximum in durability, potency and versatility, REPELOTEX is the answer to low-cost, high-production, life-of-the-fabric repellency.

A most effective agent through repeated normal laundering and dry cleaning, REPELOTEX resists non-oily spots and stains, permits dry cleaning of oily spots. REPELOTEX can be used at considerably lower concentrations because of its higher potency, and has a number of unusual advantages for the finisher: it improves hand and sewability; strengthens resin-treated fabrics; resists mark-off; lacks unpleasant odor; requires no after-wash; is easily applied; is completely compatible with resin finishes when used as recommended.



Reap every benefit in terms of production, economy and quality at no or little increase in cost over ordinary non-silicone finishes with REPELOTEX. An Onyx Technical

Service Representative will be glad to arrange for a mill demonstration for you without obligation—the best proof of all that REPELOTEX is best of all.

LIFE-OF-THE-FABRIC SOFTNESS OF HAND FOR RESIN FINISHES

For over a decade and a half, the ONYXSANS have established and consistently maintained an industry-wide standard of comparison for unmatched *soft* effects on all types of fabrics.

The easiest of all finishes to apply, involving no changes in equipment or operations, the ONYXSANS provide a range of hands that is permanent to laundering and dry cleaning on all types of synthetic and cellulosic fabrics.

The ONYXSANS are especially useful in reducing surface harshness and boardiness of fabrics resin-treated for crush resistance and dimensional stability. They impart a quality softness and are exceptionally well adapted to whites and light shades because of their minimum yellowing effects. The excellent lubricity imparted by the ONYXSANS improves the physical properties of resin-finished fabrics.

With the millions upon millions of yards processed with ONYXSANS, there has been

no single complaint as to their quality or effectiveness. Despite the modest cost of the ONYXSANS, quality has been maintained consistently through rigid raw materials specifications and production controls.

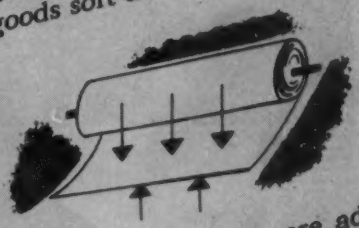
Ask the Onyx Technical Service Representative to tell you more, show you more and arrange for a mill demonstration on the ONYXSANS.

ADD MORE LIFE TO YOUR DYEING WITH A TOP AUXILIARY

An unusually effective all-around textile auxiliary, Onyx ALIPHATIC ESTER SULPHATE is an anionic dyeing assistant of great value for most fabrics.

Eliminating "shiners" and "crows-feet" in the dyeing of acetates and acetate blends, ALIPHATIC ESTER SULPHATE is also exceptionally useful in vat dyeing cotton and rayon and acid dyeing wool.

In every case, it produces unusual dye levelness, gives excellent penetration into seams and compact portions of fabrics, is highly efficient in dilute solutions, is compatible with acids, alkalies, electrolytes and hard water, has excellent stability, retards speed of exhaustion (preventing uneven dyeing), prevents bronzing, can be used at boiling temperatures and leaves dyed goods soft and pliable.



There are many more advantages to your using ALIPHATIC ESTER SULPHATE, and an Onyx Technical Service Representative will be glad to explain them. Call upon him today without obligation.

ONYX

OIL & CHEMICAL COMPANY

WARREN & MORRIS STS., JERSEY CITY 2, N. J.
CHICAGO · BOSTON · CHARLOTTE · ATLANTA

TEXTILE DIVISION

West Coast Representative:
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For Export: ONYX International, Jersey City 2, N. J.

Fine Finishing Starts Here

with STOWE-WOODWARD RUBBER COVERED ROLLS

For the uniform padding
which is essential to fine finishing . . .
For the uniform extraction
which eliminates shaded goods . . .
Start with
Stowe-Woodward Rubber Covered Rolls.
They are the
"Rubber Rolls with a Reputation"
for fine finishing.

S-W INC.

STOWE-WOODWARD, Inc.

Craftsmen in rubber rolls

NEENAH, WISCONSIN — NEWTON 64, MASSACHUSETTS — GRIFFIN, GEORGIA

For more information, write direct or use Reader Service post card.

The LONG-RANGE VIEW

The South's Dilemma: TARIFFS

Last month on this page, we discussed some of the pressures at work at the Geneva conference on world trade and tariffs. The whole purpose of that conference is to take a big slice of the U.S. textile market away from U. S. mills and give it to Japanese mills.

Historically, Southern economics and politics have hinged on free world trade; that is, low tariffs. The reason, of course, was that until recently the South had little to sell except cotton and a few other less-important agricultural products. So the whole idea was to sell cotton all over the world and let manufactured products from all over the world come into the South at the lowest possible price; that is, untaxed with tariffs. That was a neat scheme because there was little good cotton grown anywhere else.

The result was many generations of Southern politicians who soap-boxed for low tariffs to favor the cotton farmer. They're still doing it, aided and abetted by the agricultural Midwest.

Times Have Changed

The trouble is that the South's economy is rapidly becoming industrial. You drive through North and South Carolina, for example, and you see more textile mills than cotton patches. Many towns in the South are prosperous or in a slump, depending on whether textile business is good or bad.

Yet, most Southern politicians are still gleefully thumping for low tariffs. Eisenhower couldn't get much done about lowering tariffs last year when his own Republican party controlled Congress. This year, with the Democrats largely in control, the free traders are licking their chops and spreading a feast in Geneva, with the U.S. textile market on the table.

It is time Southern voters took a long look at those "senior" Senators and Representatives they keep sending back to Washington term after term. It is time textile mills spent a little effort to make sure that textile workers are voters and understand issues at stake. It is time the pretty myth of a "solid South" dominated by agricultural, low-tariff politicians is punctured. In short, it is time that all textile men who call themselves Democrats, particularly in the South, should take their heads out of the fog of nostalgic sentiment and see what politicians are doing to them.

If your wife comes home with an armful of Japanese textile goods at a time when your mill is running short time, remember whom you voted for in the last election, and why.

Challenge to CARDERS

On p. 87, we present a report on reducing carding waste. That report contains recommendations about how to run a card that undoubtedly will make many card-room overseers stop and think.

Our point of view is that here is a piece of research work that six mills thought promising enough to pay a few thousand dollars each to have done. Results, to say the least, look rewarding enough to warrant sincere efforts by mills to find out if they can reduce waste, with no sacrifice of quality, this way.

The man to whom this report is a challenge is the card-room overseer. If he is an alert overseer with enough energy and imagination to do everything possible to improve his job, he just may be successful in reducing his costs several thousand dollars a year.

Anyone who tries these recommendations should keep a few things in mind:

1. The results in the report have been accomplished, in the laboratory and in mills.
2. It is no reflection on the ability of the carder that he didn't know these things were possible. This is new knowledge. The only reflection will come if it is a good thing and the carder won't or can't take advantage of it.
3. Several card changes, settings, and speeds are involved. The carder cannot make some of the changes and ignore the others and get good results.
4. He should not be fooled by small percentage figures. A waste saving of 0.5% or 1.0% of lap weight may amount to $10,000 to $50,000 a year, depending on how much cotton the mill uses a year.

D. M. Thomas

It's the little things that Count

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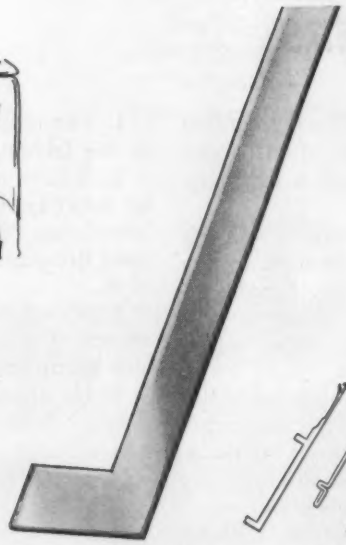

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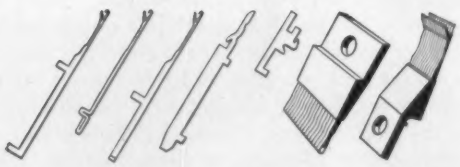

Wire Products Division

TEXTILE MACHINE WORKS, READING, PENNA.

Textile World
March, 1955 • Vol. 105 - No. 3

7 WORKER REACTIONS
And How To Handle Them

► **People react to the boss in different ways, and how you should handle the situation depends on the reaction. Here are seven reactions with tips on how to handle them.**

By **THOMAS B. WINSTON,** Assistant Editor, TEXTILE WORLD

EVERY SUPERVISOR has to keep up with how his workers are doing on the job. The problem is how to talk with them about job performance to get an improvement. People react in different ways when they are called in to talk to the boss. Suppose you are talking with a man about his performance and he threatens to quit. What would you do then?

One Southern mill with a formal program of job appraisal developed a short manual on how to handle seven kinds of reactions that were difficult for the supervisory counselors to handle. But these difficult situations are not peculiar to a formal program; in fact, a formal program is one way to improve a supervisory duty that should be done anyway.

Here Are the 7 Reactions . . .

1. The person is very nervous

You will meet this situation more often during your first conferences with a man. If he shows signs of nervousness, ask yourself if you were a little abrupt when he came in. Maybe you didn't put him at ease. Spend more time on the amenities and talk about things he knows best. Try to get him to talk. Talking will help to relax him.

Emphasize the constructive purposes of talking to him about his work. It would be wiser to discuss job performance—quality, quantity, and the like—in this interview. They can be more objectively considered and not related directly to the man himself or his personality. If he starts defending his performance too strongly, leave the discussion for another conference.

2. The person becomes extremely angry even with a tactful approach

Some people can't stand even constructive criticism. In this case, let the person talk himself out. Don't argue. Don't throw gasoline on the fire. Listen.

When he calms down, try to assure him that there is no black book with a permanent mark against him. Next time you see him, make a point of being cordial.

Call him back in a few days. Usually, he will be ready to talk reasonably on a second try. If he isn't, just listen and don't argue.

If there is then no improvement, call him back again later and ask him to listen. State your case with examples, and suggest plans for improvement.

3. The person agrees with you so quickly that you are sure he doesn't understand or is covering up disagreements

Some people try to slough off criticism by readily agreeing with everything. One reason for such a reaction is to avoid the necessity of taking steps toward improvements; the person would probably prefer to go drifting along.

Close attention may be the very thing this type of person needs. Strongly emphasize what he should do to improve his performance; and in this case, direct suggestions for improvement will probably be necessary.

Outline clearly how you intend to follow up on his progress. Close supervision will be necessary until the man stops drifting.

4. During your discussion, the person says he wants to quit

Assuming that he is a good man and you want to keep him on the job, try to find out why he wants to quit. He may not be too clear himself, and just getting his troubles off his chest will satisfy him.

If he points out a valid fault within your organization, try to correct it; and tell him you will try.

Tell him emphatically that you want him to stay, and don't be afraid to tell him. Some men talk about leaving a company only because they are not sure they are wanted or where they stand. Most people don't like to be treated with the attitude: "He should know he's doing all right unless I tell him otherwise."

If the man is accepting temporary advancement with some other company in place of a better future with you, outline the possibilities for growth in your mill.

Above all, don't let him make definite commitments about leaving or make rash statements; he might feel he has to leave.

5. After being praised for a good performance, the person indicates that he expects an immediate raise or promotion.

Most people don't expect praise to result in an immediate raise or promotion.

If too many of your men are insisting on tangible rewards, examine yourself and your discussions with them. Perhaps you have been stressing advancement and promotion too much. Emphasize that people are evaluated first to improve their present performance.

If desire for promotion is involved, make it clear that jobs are not created just for purposes of promotion. Then outline the route he can expect to follow. Make sure he understands not only how long it will be before an opening is likely to occur but also that you are making no promises and can make none. Promotion will depend on his performance in his assignments and what people think of his potentiality.

Finally, the person may not deserve advancement; and, if so, you should make it clear to him. But don't be surprised if it takes you several conferences.

6. You get no reaction at all

The man is not a stranger to you. Why is he acting this way? Is it normal? Is his attitude a wait-and-see policy or a coat of armor? Is he afraid?

Don't be afraid of silence. Give him time to think and answer. Watch for signs of interest in what you are saying, and try to develop it. Ask his opinion about something.

Give him as many strong points in his performance as you can. Don't push or try to accomplish too much in one conference.

Some men just resist the idea of talking about their work. If you think this is the case, review the value to him of knowing what his management thinks of his performance and how he can improve.

A person might resist a discussion of his habits or personality traits (courtesy, cooperation, personal appearance, modesty, and the like) because he doesn't realize that these things are closely related to job success. If this is the reason, explain that they are related and what he can do.

7. Without being emotional, the person stubbornly disagrees with your conclusions

Don't try to get his agreement in the first conference. With such a man, the first job is to make your position clear. It may take several conferences to get him to accept it.

Always expect to find some disagreement. No one ever agrees completely with the people he works with. Since full agreement is impossible, try to get as much agreement as you can.

Listen carefully. Try to find out why he disagrees. As he talks, check the reliability of your own facts and examine the validity of his criticisms. Prepare yourself for future discussions with added evidence about his performance.

Try to figure out whether his disagreement is the result of his personality or his experience in his work.

If the man criticizes your findings, tell him you will look into it and give him all the facts. If you have any questions about the reliability of his information, ask them. Then send him away to think over his position; and you do the same.

Thank him for calling his viewpoint to your attention. Remember that your facts might be distorted. Distorted information results from differences in the reactions of people.

If you get evidence that throws new light on the facts, don't hesitate to change your opinion—and let the man know of the change. Men change constantly; so should opinions about them.

PIGMENT PRINTING
Is Simple, Fast, Inexpensive

To use this process, a printer should know—

- **How printing-color binders work**
- **How printing pastes are prepared**
- **How to fix the printed colors**

PIGMENT PRINTING has developed rapidly because of several factors peculiar to the process. It is essentially simpler than older methods, and it can be applied to practically any fiber or mixture of fibers. Also, it is inexpensive and meets most fastness requirements. Early objections to wet and dry crocking have been largely overcome by improved binders. Improved hand has also resulted from research into more suitable resins used to bind the pigment to the fiber.

1. How Binders Work

A suitable binder must possess the following properties:

1. It must be insoluble and nonswelling in water or solvents so as to give fastness to washing and dry-cleaning.
2. It must form films that adhere to all fibers and yet be flexible to provide a soft hand and good resistance to rubbing.
3. It should be stable to heat, light, and chemical agents if it is not to discolor or actually break down and lose adherence to the fiber.

To obtain water insolubility, two methods are indicated:

1. Use water-soluble products that are insolubilized on the fabric by polymerization.
2. Use water-insoluble materials that require further polymerization by heat and catalysts after application.

The most modern binders go one step further to three-dimensional methods of ethyleniminic or isocyanic nature.

From a paper by Dr. G. Bertolina presented at the International Congress of Man Made Textiles, Paris, France.

Pigment printing is chemically analogous to crease-resistant finishes based on urea-formaldehyde and melamine-formaldehyde resins.

The pigments used are chosen for their fastness to light as well as all the chemical treatments the fabric may have to undergo. They include organic materials such as azoic, indanthrenic, and phthalocyanimic compounds, as well as carbon black and titanium dioxide.

In every case, the particle size is not greater than one-thousandth of a millimeter so as to give the highest covering power.

Types of Binders Used. The several types of binders used today can be divided into three classes: water-in-oil types, which consist of mixtures in which the water is emulsified in a solvent that comprises the continuous phase; oil-in-water types, which are mixtures in which the water is the continuous phase and the oil is emulsified in a discontinuous phase; and aqueous-dispersion types, in which the pigment is dispersed in water-soluble binders.

In both water-in-oil and oil-in-water types, the binders used are soluble in organic solvents.

Binders principally used are precondensed resins that polymerize upon heat treatment after application. Completely polymerized thermoplastic resins are used in a limited way for fixing metallic powders or dulling with titanium dioxide.

Water-in-Oil Binders. The binder in a water-in-oil emulsion is a precondensed resin dissolved in a solvent and is clear in its concentrated form. The colored pigment may be dispersed in either the solvent or resin. The necessary thickening for printing purposes develops when water is added and an emulsion formed.

The repulsion between the water and oil phases eliminates flushing of the color on the fabric. This characteristic allows very clean pattern edges, and fine patterns may be obtained. Since the emulsion does not form a continuous film on the cloth, the hand is soft.

This type of printing requires heat treatment to completely insolubilize the binder. No afterwashing is necessary. Binders may be divided between the external oil phase and the internal water phase. As an example, turpentine carries a melamine-formaldehyde resin dissolved in xylol and butyl alcohol as the external phase. The internal phase is made up of an aqueous dispersion of a butadiene copolymer with an acrylonitrile or ureal resin. Advantages of this system are emulsion stability and low solvent cost.

Oil-in-Water Binders. With an oil-in-water binder, thickening results when the emulsion is formed with water, dispersed pigment, resins, and solvents that comprise the mix. The aqueous phase carries the pigment and catalyst. The binder is an emulsion of resins derived from urea, thiourea, and formaldehyde. The thickener is a benzene emulsion.

This formula is fixed by aftertreating at 120 to 170° C. Oil-in-water types give good definition and sharp prints because of the same repulsion factor mentioned in water-in-oil mixes. There have been some modifications of oil-in-water formulas to include water-soluble thickeners and to eliminate organic solvents.

The addition of water-soluble thickeners tends to reduce brightness of print and washfastness and to affect the hand of the fabric.

Lower costs of such formulas make them attractive for some goods.

Aqueous-Solution Binders. Aqueous-solution binders are more or less colloidally soluble in water. If normal thickeners are used, only one phase is present, not counting the pigment dispersion. If emulsion thickeners are used, two phases are present; so there is a reversion to the oil-in-water type. In general, the binders are based on

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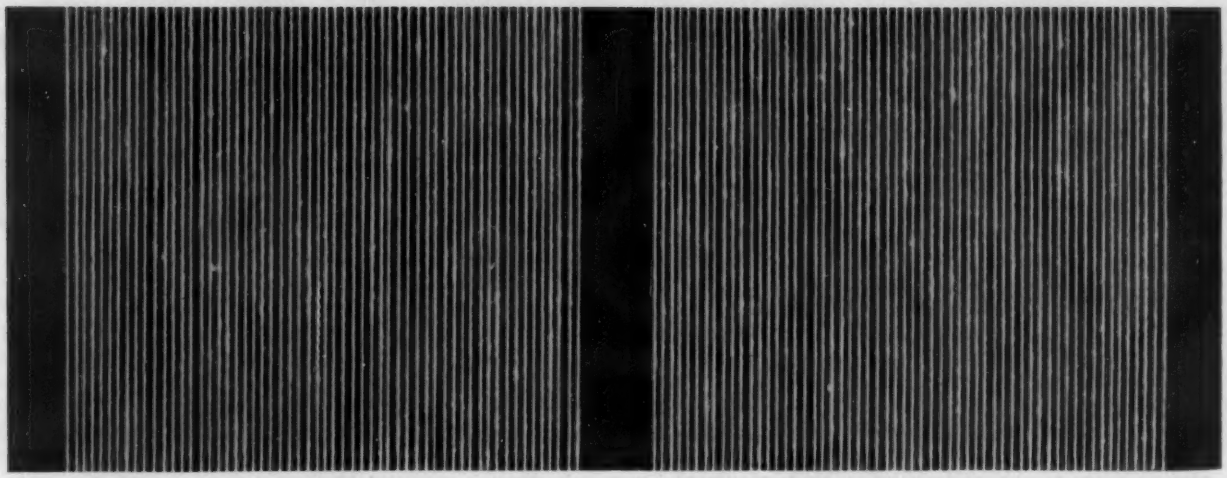

THE YARN ON THE LEFT was produced with the same card-production rate as the yarn on the right and from the same cotton, but with only 3.20% waste. Card waste for the mill-produced yarn at the right was 5.24%.

How To Reduce
CARD WASTE

This report of a one-year six-mill cooperative study of reduction of carding waste reveals that—

- **Card waste can be reduced as much as 3% of lap weight**
- **Settings, speeds, and modified lickerin assembly are major key factors**
- **Recommended speeds and settings, besides reducing carding waste, produce yarns of equal or better strength and appearance than conventional settings**

By J. F. BOGDAN,

Director of Processing Research, School of Textiles,
North Carolina State College

A TEXTILE WORLD Report to Mill Management

On the THEORY of CARDING . . .

An announcement of a new card guaranteed to improve product quality, increase card production, and reduce carding waste would create quite a stir in the textile industry. The statement that existing carding machinery is capable of making all of these gains is regarded with more skepticism. Yet, the industry has proved in the past few years that the statement is not without foundation.

The study of any preparatory textile process must consider the effect of proposed changes on quality, production, and waste. Gains in these three directions can be achieved very simply if we are allowed to disregard the effects on other factors. To improve quality, all we would need to do is decrease the production rate; to increase card production, we would need only to change to a larger production gear; to reduce card waste, we could use a roller top card or equip a revolving flat card with a fancy roll and solid cylinder screens and lickerin screens.

But decreasing production rates to improve quality would increase our unit cost; increasing the revolutions of the doffer without other changes would cause a deterioration in the web appearance; and using a roller top card would make our yarn trashy and unmarketable.

Therefore, any changes in carding procedures should be evaluated in the light of their influence on yarn strength, yarn appearance, and efficiency of processing.

Card Is High-Speed Machine

A cotton card is a high-speed machine, even though existing production rates seem to belie this statement. The time required to tear away a tuft of fibers from the fringe held by the feed roll and feed plate, transfer it to the cylinder, break up the tuft between the cylinder and flats, and deposit the individual fibers on the doffer is only about $\frac{1}{4}$ sec.

It is a popular misconception that fibers on the cylinder that have once passed the area of the flats and the doffer will have other opportunities to be acted upon by the wires of these units. However, the truth is that the fibers that are not transferred to the doffer will find themselves beneath the incoming fibers deposited on the cylinder by the lickerin; they are forced farther and farther into the wires and end up as strips.

The fact that these strips build up as layers can be proved by feeding laps of stock of two colors, one after the other, into the card and then noticing the clear division in the distribution of the colored fibers in the cylinder, flat, and doffer strips. It will be noticed, too, that the color of the sliver changes abruptly and that the length of sliver of any one color is equal to the length of the lap fed multiplied by the card draft.

Cards Should Be Kept in Perfect Condition

If it is accepted that the carding treatment of fibers does occur during such a short period of time, the need for perfect mechanical condition and accurate settings is apparent. Attention to these two points, without introducing the effects of certain changes in speeds and settings, has done much to improve a mill's product.

Every carder knows that decreasing his production rate improves the quality of his web. It is interesting to consider why. The table below shows the speeds of the moving elements and the effects for three sets of conditions.

SPEED OF CARD ELEMENTS

	A	B	C
Production, lbs. per hr	10	5	10
Feed roll, rpm	0.60	0.30	0.60
Lickerin, rpm	400	400	800
Cylinder, rpm	165	165	165
Doffer, rpm	10	5	10
Flats, ins. per min	3	3	3
Web quality	Regular	Improved	Improved

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When the production rate is changed from 10 lbs. per hr. to 5 lbs. per hr. (from *A* to *B*), the lickerin speed, cylinder speed, and flat speed are not changed. The two speeds that are changed are the speeds of the feed roll and the doffer. It is difficult to attribute the improvement in quality to the change in carding action between the cylinder and the doffer. A consideration of the change in the action at the lickerin offers some clues to the explanation.

Lickerin Speed Is Important

Only half as much lap is fed per unit of time at the lower production rate. This fact must mean that the lickerin, cylinder, and flats are working during the unit period on fiber units of smaller size, which makes the task of separating the fibers one from another an easier one, with the consequence that quality of carding is improved. Because the tufts are smaller, fewer fibers are forced into the wires of the cylinder and flats during the carding action in this area, and a saving in strips results.

Consider now the comparison of condition *C* with *A*. Here, the only difference is the increase in lickerin speed. As in *B*, an improvement in quality is noticed. This improvement is due to the fact that the lickerin now tears away smaller tufts for deposit on the cylinder to be acted upon by the wires of the flats.

At the higher speed, the lickerin approaches the surface speed of the cylinder. Consequently, the stripping action from lickerin to cylinder is more gentle and the danger of fiber entanglement is reduced.

Neps Determine Stripping Cycle

The rate of increase of neps with card running time determines the period of the stripping cycle. If an improvement in carding can be realized by some change in speeds or settings, it is evident that the length of the stripping cycle can be increased to the point where the number of neps is the same as before; or the original stripping cycle can be maintained and the average number of neps reduced.

The reason that it is possible to lengthen the stripping cycle under the improved condition is that the fibers do not load to the same extent in the wires of the carding elements. As a result, the wires are free to do a better job of disentanglement; and waste is reduced.

It is interesting to note that the carding changes that cause an improvement in quality also cause a reduction in waste. It is therefore possible to increase the carding rate, if desired, to bring the quality to the level maintained before the change. It is with the changes that can reduce carding waste with no depreciation in yarn quality that this report is concerned.

Types of CARD WASTE . . .

Any program concerned with reducing waste must deal with the two categories of waste: preventable and so-called nonpreventable.

Preventable waste has been described as waste arising from end breaks, careless operators, etc. Commonly called "reworkable" waste and often "white" waste, it is not purposely removed and is composed of perfectly good material. Most waste-reduction programs deal with this category of waste.

Nonpreventable waste has been defined as waste removed in the process of cleaning the fiber or other manufacturing function. Commonly called nonreworkable waste, it is usually purposely removed. Since it cannot be returned to the manufacturing process, it is true waste, although most of it has some sales value as waste.

The research on which this report is based was aimed at preventing, or at least substantially reducing, this so-called nonpreventable waste.

The 8 Types of Waste

Cotton-card waste is divided into the following eight categories:

Motes represent the heavier type of waste found beneath the lickerin. It is composed of seed, seed fragments, leaf, trash, and lint removed by the opening and cleaning action of the lickerin and mote knives.

Fly is the lighter and cleaner waste composed of relatively short fibers that are thrown out between the openings of the lickerin and cylinder screens. In practice, motes and fly are usually combined as one type of waste to facilitate cleaning beneath the card without attempting to separate these wastes.

Cylinder strips is the waste removed from the cylinder by vacuum or roll stripping at the end of the stripping cycle. It is composed of essentially normal-length fibers that become embedded in the clean clothing when the card is started after stripping; however, it also contains shorter fibers and trash that accumulate during the processing period.

Doffer strips is the waste removed from the doffer at the end of the stripping cycle. The composition of this waste is similar to that of the cylinder strips. Cylinder strips and doffer strips are combined and are sold as vacuum strips.

Flat strips are the fibers and trash that result from the carding action between the cylinder and the flats. These strips contain a large amount of usable fiber and are the most valuable of card wastes.

Scavenger or clearer waste is the waste collected by the revolving flannel-covered clearer roll at the small opening between the lickerin cover and the feed roll. This waste is composed of relatively short fibers that are carried around by the air set in motion by the lickerin.

Sweeps is the waste swept from the floor around the card. It is composed mainly of lint, but it may contain a considerable amount of foreign matter of vegetable and nonvegetable nature.

Reworkable waste is composed of pieces of picker lap removed in starting a new lap and running out an old lap, short lengths of sliver, and the soft roll of fibers formed by the doffer comb when the card is started.

The control of the last two wastes, sweeps and reworkable, is a management problem, the solution of which depends on the proper instruction of picker tenders and card tenders.

The first six types of waste can be controlled to a large extent by mechanical changes and modification of the card. It is with these wastes and the changes that affect them that we are concerned in this report.

These Results Reduced Card Waste up to 50%

THESE CARD SPEEDS AND SETTINGS . . .

Clothing	
Lickerin	32 (points per sq. in.)
Cylinder	100
Doffer	110
Flats	110
Speeds	
Lickerin (rpm.)	800
Cylinder (rpm.)	165
Doffer (rpm.)	Mill production
Flats (ins. per min.)	0.40
Doffer comb (cycles per min.)	Depends on production
Settings (thousands of inch)	
Feed plate to lickerin	12
Mote knives to lickerin	
Top	7
Bottom	7
Top mote knife to feed plate	1 (in.)
Bottom mote knife to bars	7/8 (in.)
Top edge of back plate to flats	10
Mote knife angle	30 (degrees)
Lickerin screen to lickerin	
Back	10
Middle	10
Front	10
Lickerin to cylinder	7
Back knife plate to cylinder	
Top	22
Bottom	68
Flats to cylinder	
Back	7
Intermediate	7
Intermediate	9
Intermediate	10
Front	12
Flat stripping comb to flats	15
Top edge front knife to flats	10
Front knife plate to cylinder	
Top	34
Bottom	34
Doffer to cylinder	5
Doffer comb to doffer	17
Cylinder screen to cylinder	
Back	29
Center	68
Front	187
Type of lickerin screen	Bar (7¼ in.)
Type of cylinder screen	Bar

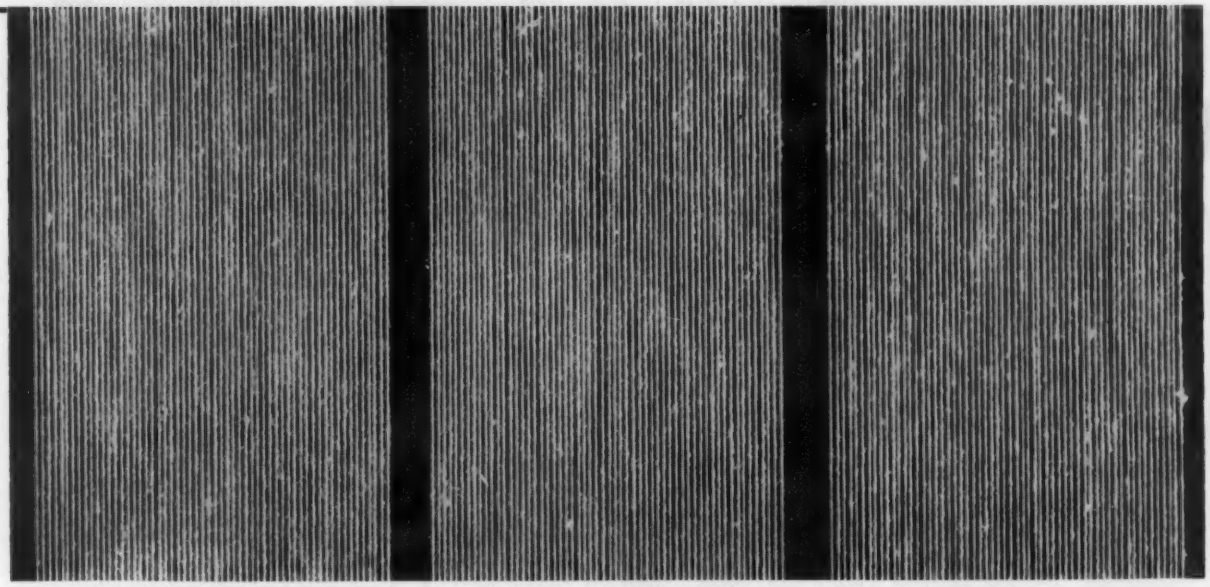
USE OF THESE SETTINGS AND SPEEDS in combination with other modifications recommended produced the savings in card waste shown in the table below without affecting yarn quality, as indicated in the accompanying photographs.

. . . REDUCED WASTE 2.89% OF LAP WEIGHT

Mill	Total Carding Waste*			Saving		Number x Strength Product	
	Mill waste figures	N.C.S. carding mill settings	N.C.S. final settings	Over mill figures	Over N.C.S. carding mill settings	N.C.S. carding mill settings	N.C.S. final settings
A	6.30 (%)	5.24 (%)	3.20 (%)	3.10 (%)	2.04 (%)	1,917	1,968
B	3.60	4.16	2.72	0.88	1.44	1,912	2,012
C	6.14	4.48	2.31	3.83	2.17	1,932	2,071
D	5.91	5.57	3.15	2.76	2.42	2,470	2,438
E	....	7.96	4.16	....	3.80	2,305	2,329
F	6.36	7.06	2.49	3.87	4.57	2,027	1,999
Average saving				2.89%	2.74%		

* As a percentage of lap weight

CARDING WASTE WAS REDUCED an average of 2.89% of lap weight over mill figures in final experiments with recommended speeds, settings, and modifications on cottons of the six mills participating.

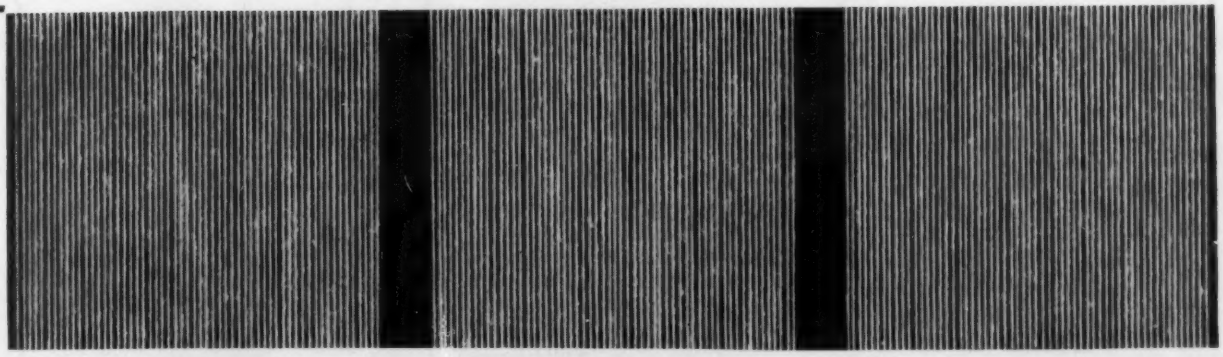


N.C.S. Yarn
Mill Settings

N.C.S. Yarn
Recommended Settings

Mill Yarn
Control

YARN APPEARANCE was not lowered although a saving of 0.88% of lap weight resulted in spinning experiments on 15/16-in. LM cotton. N.C.S. yarn with mill settings (left) was spun to indicate reproducibility on laboratory scale of normal mill yarn at right.



N.C.S. Yarn
Mill Settings

N.C.S. Yarn
Recommended Settings

Mill Yarn
Control

YARN APPEARANCE did not suffer in a blend of 1 1/16 and 1 1/32-in. SLM cotton, although a saving of 3.8% of lap weight resulted when recommendations were applied.

HERE ARE INDIVIDUAL WASTE SAVINGS

Mill	Card settings	Cylinder strips	Doffer strips	Flat strips	Motes and fly	Clearer	Total
A.....	Mill	0.98(%)*	0.10(%)*	2.47(%)*	1.66(%)*	0.03(%)*	5.24(%)*
	N.C.S.	0.92	0.10	0.89	1.26	0.03	3.20
	Saving	0.06	0	1.58	0.40	0	2.04
B.....	Mill	0.28	0.10	1.78	1.90	0.10	4.16
(continuous	N.C.S.	0.29	0.12	0.66	1.57	0.08	2.72
stripper)	Saving	−0.01	−0.02	1.12	0.33	0.02	1.44
C.....	Mill	0.88	0.09	2.03	1.39	0.09	4.48
	N.C.S.	0.80	0.09	0.71	0.67	0.04	2.31
	Saving	0.08	0	1.32	0.72	0.05	2.17
D.....	Mill	1.06	0.20	2.78	1.33	0.20	5.57
	N.C.S.	1.10	0.15	0.95	0.88	0.07	3.15
	Saving	−0.04	0.05	1.83	0.45	0.13	2.42
E.....	Mill	1.82	0.21	3.98	1.74	0.21	7.96
	N.C.S.	1.21	0.17	1.22	1.27	0.29	4.16
	Saving	0.61	0.04	2.76	0.47	−0.08	3.80
F.....	Mill	0.44	0.12	1.17	4.75	0.58	7.06
	N.C.S.	0.78	0.11	0.75	0.78	0.07	2.49
	Saving	−0.34	0.01	0.42	3.97	0.51	4.57
Average saving.....		0.06	0.01	1.50	1.06	0.11	2.74

* As a percentage of lap weight

FLAT STRIPS showed greatest savings, an important factor because of the spinnable lint they contain.

SHIRLEY ANALYZER TESTS SHOW MORE TRASH, LESS LINT IN WASTE

Card settings	Motes and Fly Waste			Flat-Strip Waste		
	Lint	Trash	Ratio trash to lint	Lint	Trash	Ratio trash to lint
Mill A.....	26.2 (%)	52.8 (%)	2.02 (to 1)	65.3 (%)	18.9 (%)	0.29 (to 1)
N.C.S.....	7.2	60.2	8.35	51.8	21.1	0.41
Mill B.....	23.7	57.5	2.43	79.9	8.3	0.11
N.C.S.....	14.9	73.1	4.92	60.2	16.8	0.28
Mill C.....	59.7	23.7	0.40	75.5	6.2	0.08
N.C.S.....	22.0	38.7	1.76	86.6	11.3	0.13
Mill D.....	49.5	23.4	0.47	84.7	5.9	0.07
N.C.S.....	41.8	32.0	0.76	76.1	10.0	0.13
Mill E.....	28.9	50.4	1.75	80.1	15.6	0.20
N.C.S.....	26.7	52.4	1.96	61.4	20.9	0.34
Mill F.....	49.5	31.7	0.64	78.1	6.2	0.08
N.C.S.....	24.1	52.7	2.19	71.4	10.0	0.14

MORE TRASH AND LESS LINT, as shown by these results of Shirley Analyzer tests, were removed by settings and speeds designed to use more fully the cleaning capacity of the flats.

HOW PARTICIPATING MILLS ORGANIZED CARDING

Mill	A	B	C	D	E	F	N.C.S.
Speeds							
Lickerin (rpm.)	428	784	800	465	425	780	800
Cylinder (rpm.)	175	168	165	175	169	165	165
Doffer (rpm.)	11.9	18.2	8.7	5.5	7	9.5	Mill
Flats (ins. per min.)	3.1	2.6	3	3.5	3	1.5	0.4
Doffer comb (cycles per min.)	1,700	1,800	1,350	1,275	1,100	1,600	Variable
Continuous stripper (rpm.)	.....	1,900	.....	.....	.....	.....	2,100
Weights							
Lap (oz. per yd.)	14.5	17	13	13.5	15.5	14	Mill
Sliver (grs. per yd.)	60	60	51	55	50	60	Mill
Production (lbs. per hr.)	14.6	24.7	10.9	7.0	8.2	12.0	Mill
Yarn number	27	8	25.5	20	16.5	10	Mill

CARDING SETUP for participating mills used as a basis for this study are shown in this table.

These Are the Cottons N. C. State Worked With

Mill	Territory	Staple length	Grade
A	Carolinas	1 (in.)	LM
B	.....	15/16	LM
C	Miss. Delta	1 1/16	SM
D	Miss. Delta	1 1/16	SM
E	Eastern (50%)	1 1/32	SLM
	Arizona (50%)	1 1/16	SLM
F	.....	1	M

The Five-Drive Card

The waste-reduction research reported in these pages was conducted on a 1919 model Saco-Lowell card similar in all respects to cards in use in mills except for its drive. The card has a main drive motor and, for ease of experimentation, individual variable-speed drives on the lickerin, doffer, flats, and comb.

Cooperative Research In Action

The research behind this report was conducted over a one-year period at the School of Textiles, N. C. State College, under an arrangement whereby the results were exclusively the property of supporting mills for a period of one year after completion of the study. This one-year period has expired, and the results of the project are being made public in this report.

The mills that cooperatively supported this project were:

Avondale Mills
Burlington Mills Corp.
Randolph Mills
J. P. Stevens Co.
Swift Mfg. Co.
Textiles, Inc.

How the Tests Were Made

The results presented in this report are based on work in which full-size production machines were used under conditions duplicating mill processing conditions as closely as possible. The cottons used were supplied by the supporting mills in picker-lap form to eliminate variables in opening procedures.

To localize the factors affecting waste in carding, laps of all six cottons were processed at the recommended speeds and settings for nep reduction developed in previous carding research at N.C. State, except for whatever one variable was being measured. The variable, such as a speed or setting, was tested at several conditions ranging from subnormal to abnormal. After results of individual variables were obtained, tests in which the variables were integrated were made.

In all cases, fiber was carded for 2 hrs. and only the sliver from the last ½ hr. of the run was processed into yarn. Variations in nep count, yarn strength, yarn evenness, yarn appearance, wastes, etc. were recorded for each sample processed and data subjected to the usual statistical yardsticks for variation and dependability.

In all cases, yarns furnished by each mill and data on the manufacturing organization for each mill were used as controls. Additional controls were provided by the manufacture of yarns at N. C. State with the mill's manufacturing organization.

The work reported here is an extension of research on nep control reported in TEXTILE WORLD, May, 1952, pp. 91-106. In this waste-reduction study, the speeds and settings recommended in the nep-control report, such as the high lickerin speed, were used as the basis for experimentation and improved upon. It will be noted in the table of carding speeds and weights that three of the participating mills were using the high lickerin speed and other results of the earlier study in their normal organization.

While space does not permit recording of all data, this report summarizes the results of significant experiments. Although the data presented here may cover only one cotton in some cases, results for all six cottons used followed the same trend and results in all cases were similar or in proper relation to each other.

MOTES AND FLY Can Be Reduced by Lickerin-Assembly Changes and Settings

The amount of motes and fly removed at the mote knives and lickerin screen can be reduced to zero by using a solid lickerin screen that extends from the feed plate to the cylinder. This type of screen is used for carding many synthetic fibers, where cleaning is not one of the necessary functions of the card. This arrangement would not be useful for processing cotton, however, since the trash found in the normal motes and fly waste would be carried to the cylinder, disintegrated between cylinder and flats, and carried forward into the sliver.

At the other extreme, it is possible to process cotton experimentally without using the mote knives or cylinder screen; but under these conditions, the amount of waste found beneath the lickerin is prohibitively high.

Somewhere between these extremes lies the optimum condition for each variety of cotton.

One of the simpler ways to reduce the amount of motes and fly is to relocate the position of the mote knives. The normal schedule of card settings specifies the distance between the mote knives and the lickerin and the angle of the top mote knife to the vertical. The distance between the top mote knife and the edge of the feed plate affects waste removal at these points, but this distance is usually not controlled.

REDUCE FLY WASTE BY MOVING MOTE KNIVES

Mote-knife position		Delivery and Wastes in Pounds and Percentages											
Top to feed plate	Bottom to screen		Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total	Skein break	Yarn No.	Number x strength	Twist	Twist multiplier
1 7/8 ins.	1/2 in.	(lbs.)	18.87	0.12	0.06	0.28	0.42	0.12	19.87	84.0	25.5	2,142	17.8	3.53
		(%)	94.97	0.60	0.30	1.41	2.11	0.61	100.00					
1 1/4 ins.	1 1/8 ins.	(lbs.)	18.43	0.11	0.03	0.30	0.25	0.17	19.29	83.0	26.0	2,158	16.9	3.31
		(%)	95.54	0.57	0.16	1.55	1.30	0.88	100.00					

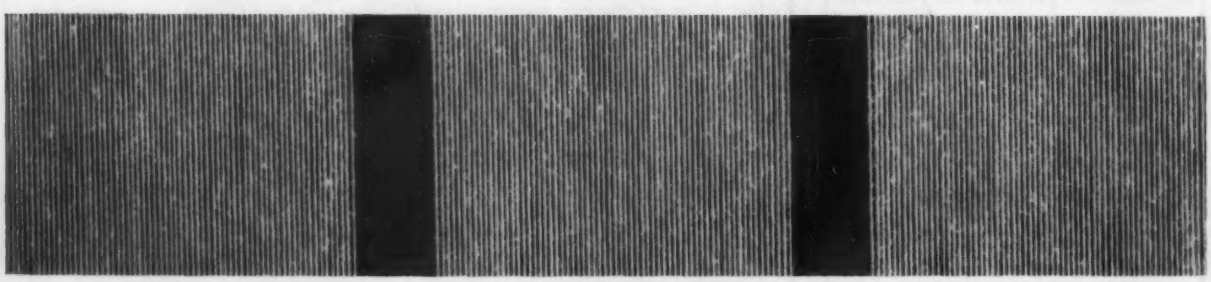
1 1/16-in. SM cotton — Card running time, 2 hrs.

MOVING MOTE KNIVES nearer the feed plate can reduce waste 0.8% of lap weight. In the table, sliver delivery and waste figures are expressed in pounds and in percent of lap weight fed.

A LONG LICKERIN SCREEN CAN REDUCE WASTE AND PRODUCE BETTER YARN

Lickerin-screen length		Delivery and Wastes in Pounds and Percentages							Skein break	Yarn No.	Number x strength	Twist
		Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total				
6 5/8 ins.	(lbs.)	45.53	0.37	0.05	0.44	0.90	0.04	47.33	244	8.7	2,123	13.2
	(%)	96.20	0.78	0.11	0.93	1.90	0.08	100.00				
7 1/4 ins.	(lbs.)	46.21	0.44	0.05	0.46	0.63	0.01	47.80	261	8.3	2,166	13.7
	(%)	96.67	0.92	0.11	0.96	1.32	0.02	100.00				
8 ins.	(lbs.)	44.96	0.47	0.05	0.50	0.52	0.02	46.52	256	8.1	2,074	13.6
	(%)	96.65	1.01	0.11	1.07	1.12	0.04	100.00				

15/16-in. LM cotton — Card running time, 2 hrs.

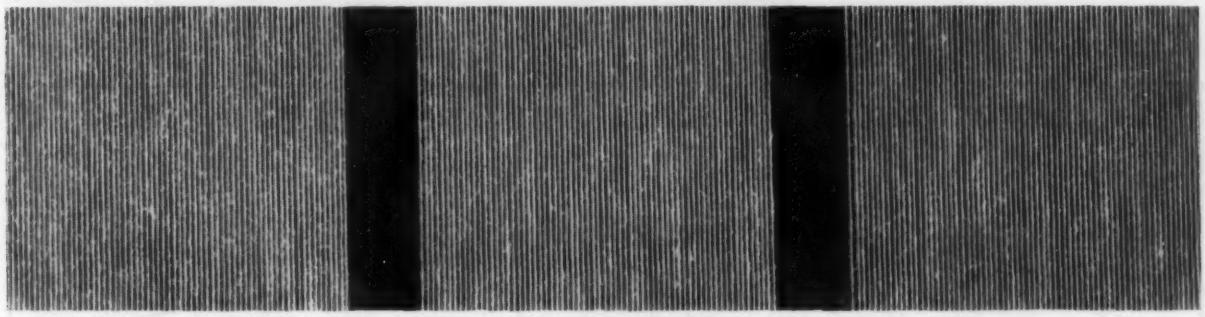


6 5/8-in. screen **7 1/4-in. screen** **8-in. screen**

BEST SCREEN LENGTH MAY VARY WITH COTTON PROCESSED

Lickerin-screen length		Delivery and Wastes in Pounds and Percentages							Skein break	Yarn No.	Number x strength	Twist
		Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total				
6⅝ ins.	(lbs.)	19.09	0.16	0.02	0.18	0.29	0.04	19.78	85	26.4	2,244	16.3
	(%)	96.51	0.81	0.11	0.91	1.46	0.20	100.00				
7¼ ins.	(lbs.)	18.86	0.16	0.02	0.18	0.21	0.01	19.44	96	24.5	2,352	17.4
	(%)	97.02	0.82	0.10	0.93	1.08	0.05	100.00				
8 ins.	(lbs.)	20.24	0.19	0.02	0.20	0.17	0.01	20.83	85	25.9	2,202	17.6
	(%)	97.17	0.91	0.10	0.96	0.81	0.05	100.00				

1 1/16-in. SM cotton — Card running time, 2 hrs.

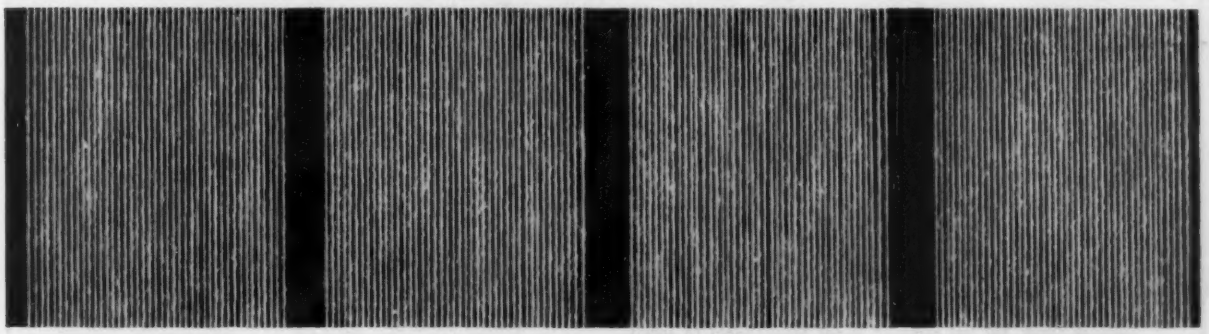


6⅝-in. screen — 7¼-in. screen — 8-in. screen

LICKERIN-CYLINDER SETTING AFFECTS WASTE, STRENGTH, APPEARANCE

Lickerin-screen settings (1/1000 in.)		Delivery and Wastes in Pounds and Percentages							Skein break	Yarn No.	Number x strength	Twist
		Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total				
17, 17, 17	(lbs.)	22.00	0.25	0.02	0.40	0.53	0.02	23.22	198	11.7	2,317	11.5
	(%)	94.74	1.08	0.09	1.72	2.28	0.09	100.00				
10, 10, 10	(lbs.)	27.08	0.25	0.02	0.48	0.60	0.04	28.47	193	11.7	2,258	11.3
	(%)	95.11	0.88	0.07	1.69	2.10	0.15	100.00				
68, 34, 10	(lbs.)	26.32	0.26	0.02	0.44	0.53	0.07	27.64	179	11.7	2,094	11.5
	(%)	95.22	0.94	0.07	1.59	1.92	0.26	100.00				
10, 34, 68	(lbs.)	27.61	0.24	0.02	0.42	0.42	0.06	28.77	178	12.2	2,172	11.4
	(%)	95.96	0.84	0.07	1.46	1.46	0.21	100.00				

1-in. Middling cotton — Card running time, 2 hrs.



17, 17, 17 — 10, 10, 10 — 68, 34, 10 — 10, 34, 68

FLAT-SPEED CONTROL Offers Greatest Saving

It is in the control of flat strips that the greatest saving can be made. There is no reason to assume that the normal flat speed of 3 to 3½ ins. per min. is the best speed for all grades of cotton and all production rates.

The rate of increase of flat strips with flat speed is essentially constant. As the amount of flat strips is almost directly proportional to flat speed, a reduction in this waste can be accomplished by slowing the speed of the flats. Mills can cut the amount of flat strips in half without affecting yarn quality, provided other recommendations are also applied by removing the cylinder pulley that drives the flat pulley and running the belt on the hub of the cylinder.

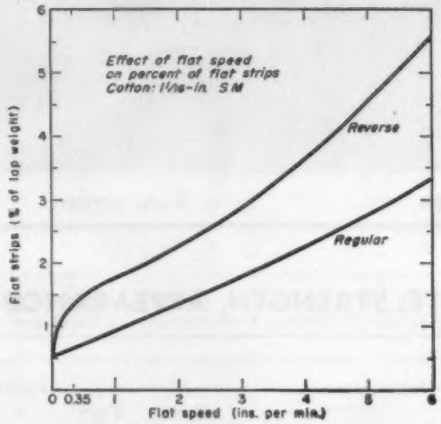
The amount of stock held by each flat is not proportional to speed. Flats tend to load at the beginning of their cycle of contact with the cylinder. After the flats have become partially loaded, they tend to resist further loading of fibers but do not appear to prohibit the entrance of leaf and trash. It appears that the fibers held by the flats tend to cling to many of the leaf and other particles and prevent their being carried forward into the sliver.

An inspection of the inner and outer surfaces of the flat strips shows a difference in cleanliness that supports this contention.

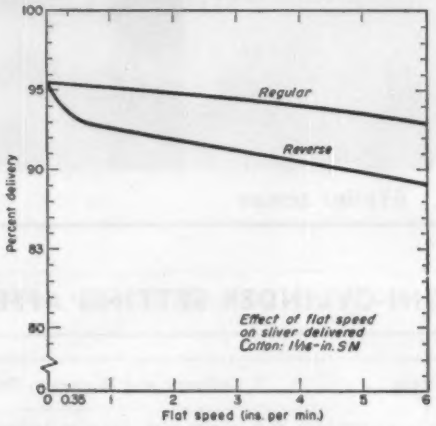
Carding waste and yarn results obtained with a wide range of flat speeds in the regular direction and in the reverse direction indicate that slowing the flat speed will neither materially decrease yarn strength nor appearance.

Reverse speeds have been tried with the hope that the trash would be removed by the flats before it was pulverized by the action of the cylinder and flats. While some of these results are interesting, the disadvantages of the increase in flat strips when running flats in reverse and the difficulty of stripping the flats at the back of the card more than offset the advantages that may be realized in other ways: for instance, better cleaning at the lickerin.

SLOWER FLAT SPEEDS REDUCE WASTE AND INCREASE DELIVERY

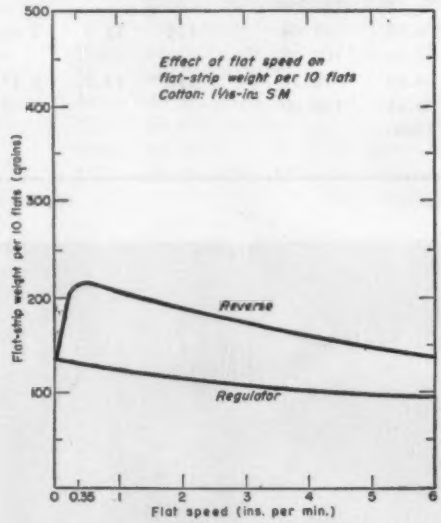

Effect of flat speed on percent of flat strips
Cotton: 1⅛-in. S M
Reverse
Regular
Flat strips (% of lap weight)
Flat speed (ins. per min.)

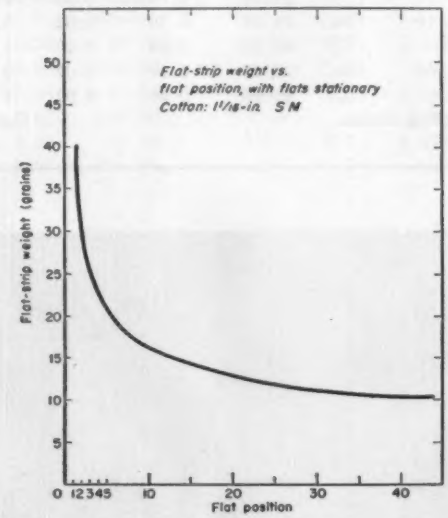
FLAT STRIPS ARE LOWER, as a percent of lap weight fed, at lower flat speeds, whether the flats run in the regular or reverse direction. Lower speed does not depreciate yarn quality.



MORE SLIVER IS DELIVERED, as a percent of lap weight fed, at lower flat speeds. Running flats backwards reduces sliver delivered and increases flat waste.

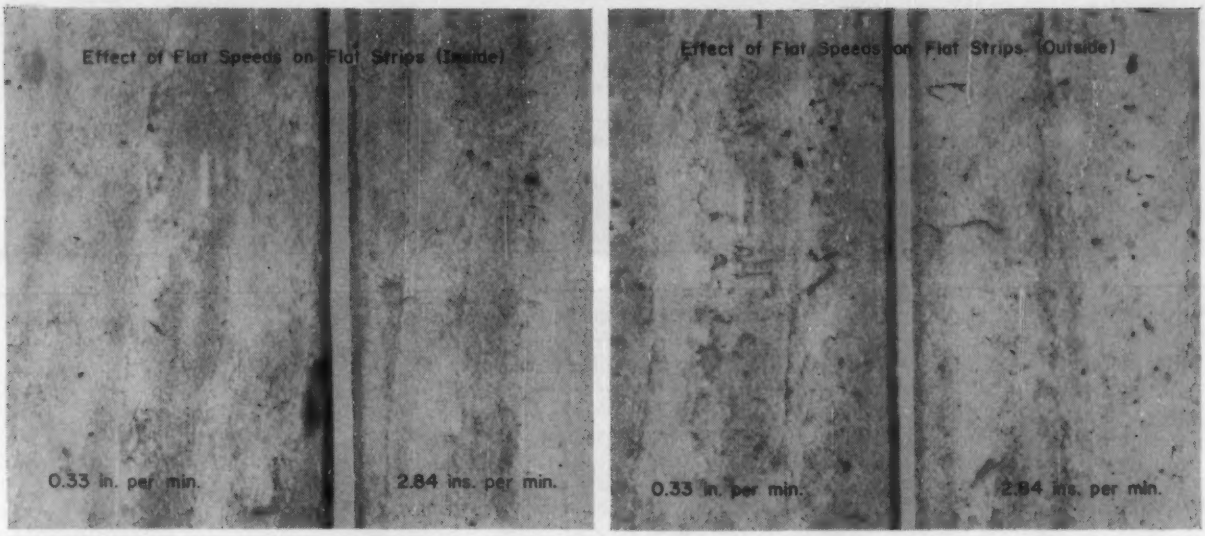
FLATS LOAD QUICKLY, REMOVE MORE TRASH THAN LINT


Effect of flat speed on flat-strip weight per 10 flats
Cotton: 1⅛-in. S M
Reverse
Regulator
Flat-strip weight per 10 flats (grains)
Flat speed (ins. per min.)



FLATS ENTERING CARD pick up most of their lint before reaching the fifth flat position. After that, the flat continues to remove trash but lint removed is not proportional to speed.

FLATS DO MORE CLEANING AT LOWER SPEED

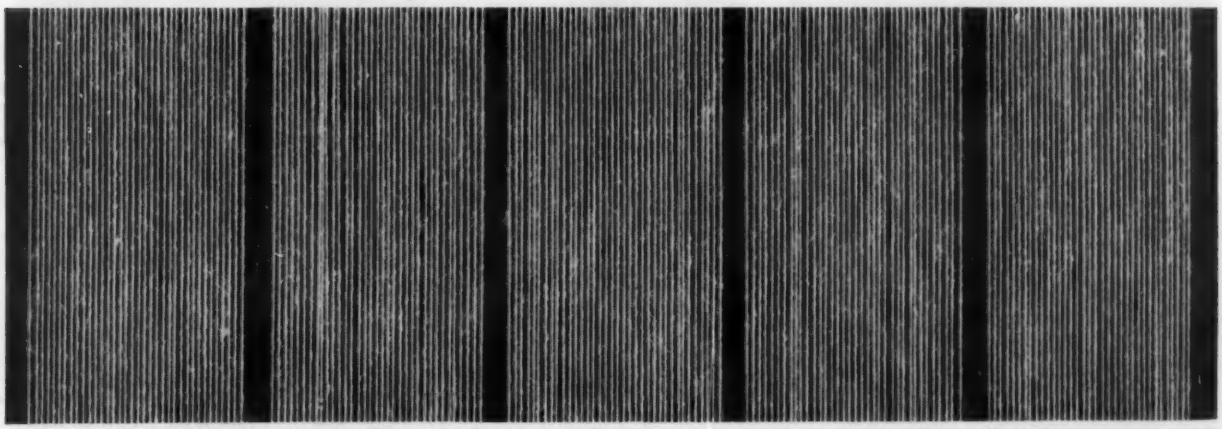

Effect of Flat Speeds on Flat Strips (Inside)
0.33 in. per min.
2.84 ins. per min.
Effect of Flat Speeds on Flat Strips (Outside)
0.33 in. per min.
2.84 ins. per min.

CLEANING CAPACITY OF LINT IN FLATS is taken advantage of more efficiently at lower flat speeds, but the amount of lint in flats is not significantly higher at low speed.

YARN QUALITY IS NOT MATERIALLY AFFECTED BY FLAT SPEED

Flat speed (ins. per min.)	Flat direction		Delivery and Wastes in Pounds and Percentages							Skein break	Yarn No.	Number x strength	Twist
			Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total				
0	.....	(lbs.)	12.96	0.08	0.01	0.07	0.55	0.11	13.78	130	18.5	2,405	16.4
		(%)	94.05	0.58	0.07	0.51	3.99	0.80	100.00				
.60	Regular	(lbs.)	15.47	0.10	0.02	0.15	0.71	0.03	16.48	124	19.5	2,418	17.0
		(%)	93.87	0.61	0.12	0.91	4.31	0.18	100.00				
2	Regular	(lbs.)	12.19	0.08	0.01	0.26	0.60	0.10	13.24	129	18.3	2,361	16.5
		(%)	92.07	0.60	0.08	1.96	4.53	0.76	100.00				
6	Regular	(lbs.)	13.50	0.08	0.01	0.65	0.59	0.10	14.93	127	18.6	2,362	16.4
		(%)	90.42	0.54	0.07	4.35	3.95	0.67	100.00				
.35	Reverse	(lbs.)	12.94	0.08	0.02	0.23	0.50	0.11	13.88	124	19.6	2,430	16.3
		(%)	93.23	0.58	0.14	1.66	3.60	0.79	100.00				
2	Reverse	(lbs.)	12.79	0.08	0.01	0.40	0.52	0.09	13.89	123	19.6	2,411	16.5
		(%)	92.08	0.58	0.07	2.88	3.74	0.65	100.00				
6	Reverse	(lbs.)	12.50	0.08	0.01	0.78	0.56	0.11	14.04	125	19.3	2,413	16.5
		(%)	89.03	0.57	0.07	5.56	3.99	0.78	100.00				

$1\frac{1}{16}$-in. M cotton
Card running time, 2 hrs.



SLIVER DELIVERY IS HIGHER with lower flat speeds; and yarn quality is fairly consistent in this series of tests made with speeds from 0 to 6 ins. per min., regular and reverse directions.

PROGRESSIVE FLATS SETTINGS IMPROVE APPEARANCE

Flats-to-cylinder settings back to front	Delivery and Wastes in Pounds and Percentages	Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total	Skein Break	Yarn No.	Number x strength	Twist
7, 7, 7, 7, 7	(lbs.)	45.53	0.37	0.05	0.44	0.90	0.04	47.33	244	8.7	2,123	13.2
	(%)	96.20	0.78	0.11	0.93	1.90	0.08	100.00				
7, 7, 9, 10, 12	(lbs.)	45.81	0.31	0.04	0.40	0.94	0.04	47.54	254	8.3	2,108	13.2
	(%)	96.36	0.66	0.08	0.84	1.98	0.08	100.00				
12, 10, 9, 7, 7	(lbs.)	45.33	0.35	0.05	0.41	0.96	0.04	47.14	259	8.0	2,072	13.1
	(%)	96.16	0.74	0.11	0.87	2.04	0.08	100.00				
$1\frac{1}{16}$-in. LM cotton					Card running time, 2 hrs.							

Flats-to-cylinder settings back to front	Delivery and Wastes in Pounds and Percentages	Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total	Skein break	Yarn No.	Number x strength	Twist
7, 7, 7, 7, 7	(lbs.)	25.04	0.20	0.03	0.23	0.47	0.03	26.00	194	10.1	1,959	9.7
	(%)	96.31	0.77	0.12	0.88	1.81	0.11	100.00				
7, 7, 9, 10, 12	(lbs.)	25.12	0.18	0.03	0.21	0.44	0.02	26.00	227	9.8	2,225	10.1
	(%)	96.62	0.68	0.12	0.81	1.69	0.08	100.00				
12, 10, 9, 7, 7	(lbs.)	23.29	0.21	0.03	0.24	0.49	0.03	24.29	194	10.4	2,018	10.2
	(%)	95.88	0.87	0.12	0.99	2.02	0.12	100.00				
1-in. M cotton					Card running time, 2 hrs.							

A FLATS-TO-CYLINDER SETTING of 0.007 in., recommended in a report on nep control [TW, May '52, pp. 91-106], has been difficult for some mills to maintain. The effects of varying flat settings have been reinvestigated, and it now appears that improved carding can result from settings of 7, 7, 9, 10, 12 from back to front. These progressive settings give yarns of good strength and improved appearance.

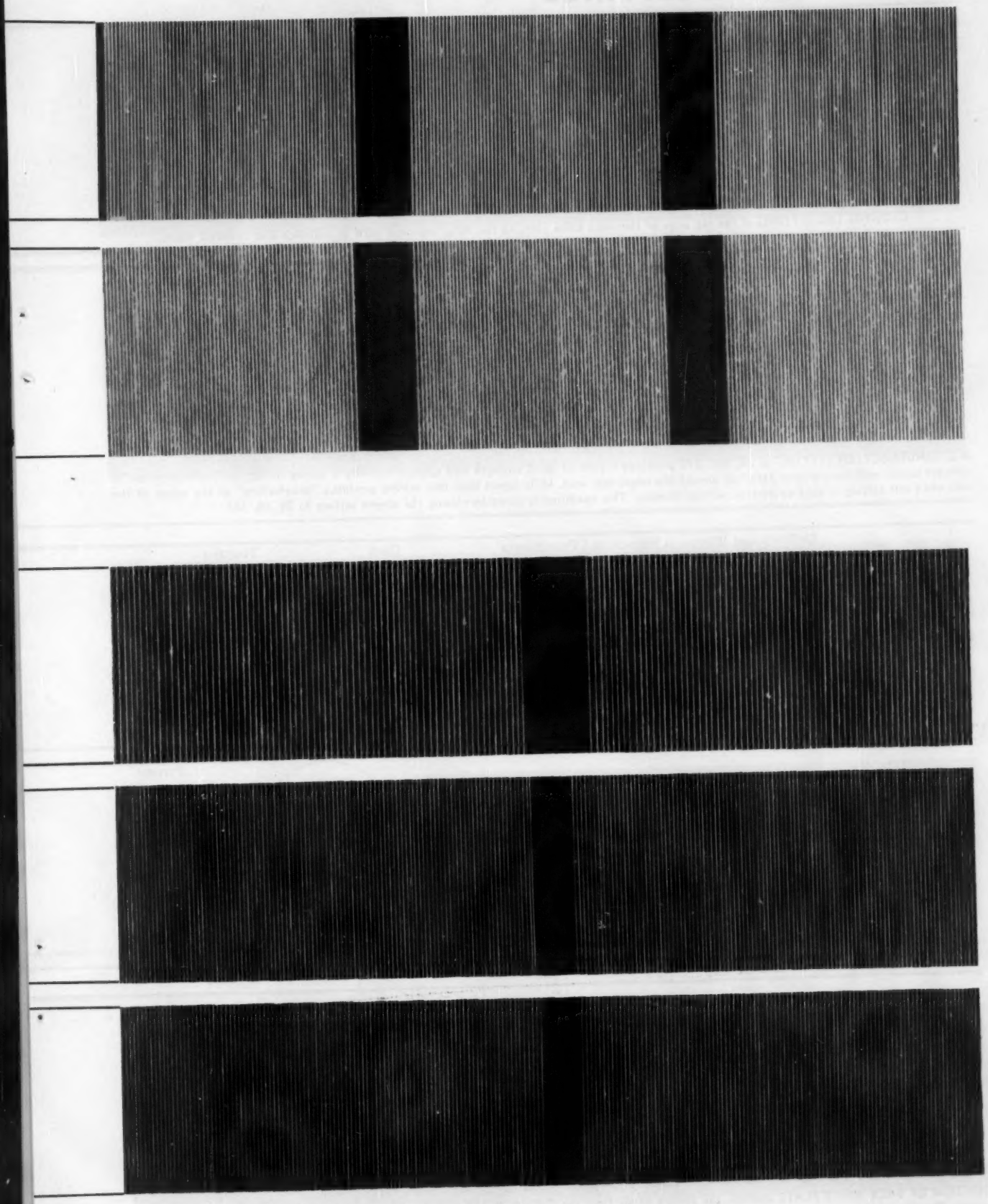
CLOSER BACK-PLATE-TO-FLATS SETTING CUTS CLEARER WASTE

Back knife-plate Top-edge to flats	Delivery and Wastes in Pounds and Percentages	Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total	Skein break	Yarn No.	Number x strength	Twist	Act. TM	Percent Variation Card	Yarn	Integrator
0.068 in.	(lbs.)	30.69	0.24	0.04	0.84	0.80	0.08	32.69	81	26.4	2,138	23.3	4.53	18.6	113	16.3
	(%)	93.88	0.73	0.12	2.57	2.45	0.25	100.00								
0.010 in.	(lbs.)	30.29	0.28	0.04	0.63	0.80	0.06	32.10	84	26.3	2,209	23.3	4.54	13.6	113	17.2
	(%)	94.36	0.87	0.13	1.96	2.49	0.19	100.00								
1-in. LM cotton					Card running time, 2 hrs.											

Back knife-plate Top-edge to flats	Delivery and Wastes in Pounds and Percentages	Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total	Skein break	Yarn No.	Number x strength	Twist	Act. TM	Percent Variation Card	Yarn	Integrator
0.068 in.	(lbs.)	18.63	0.11	0.03	0.36	0.29	0.16	19.58	83	25.8	2,141	17.9	3.52	12.3	100	12.78
	(%)	95.15	0.56	0.15	1.84	1.48	0.82	100.00								
0.010 in.	(lbs.)	18.94	0.12	0.02	0.33	0.26	0.05	19.72	90	25.0	2,250	17.1	3.42	13.9	103	14.0
	(%)	96.05	0.61	0.10	1.67	1.32	0.25	100.00								
$1\frac{1}{16}$-in. SM cotton					Card running time, 2 hrs.											

Back knife-plate Top-edge to flats	Delivery and Wastes in Pounds and Percentages	Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total	Skein break	Yarn No.	Number x strength	Twist	Act. TM	Percent Variation Card	Yarn	Integrator
0.068 in.	(lbs.)	13.56	0.11	0.02	0.29	0.22	0.16	14.36	133	19.0	2,527	16.3	3.74	15.0	90	12.6
	(%)	94.43	0.77	0.14	2.02	1.53	1.11	100.00								
0.010 in.	(lbs.)	13.58	0.11	0.02	0.31	0.19	0.07	14.28	127	19.8	2,515	16.7	3.75	16.8	101	15.4
	(%)	95.10	0.77	0.14	2.17	1.33	0.49	100.00								
$1\frac{1}{16}$-in. SM cotton					Card running time, 2 hrs.											

THE BACK-PLATE-TO-FLATS SETTING, seldom varied on cards, has a pronounced effect on the quality of yarn spun. At N. C. State, the normal setting of the top edge of the plate to the flats was 0.068. When this setting was closed to 0.010 in. by moving the back plate up, a reduction in clearer waste and a decided improvement in yarn quality resulted.



Effects of OTHER SETTINGS

Front knife-plate top-edge setting		Delivery and Wastes in Pounds and Percentages							Card running time (hrs.)	Skein break	Yarn No.	Number x strength	Twist	Act. TM
		Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total						
0.034 in.	(lbs.)	17.52	0.15	0.04	0.20	0.35	0.04	18.30	2	176	13.6	2,393	16.5	4.47
	(%)	95.74	0.82	0.22	1.09	1.91	0.22	100.00						
0.010 in.	(lbs.)	17.18	0.18	0.03	0.22	0.34	0.05	18.00	2	186	13.2	2,455	16.8	4.62
	(%)	95.45	1.00	0.17	1.20	1.90	0.28	100.00						
0.068 in.	(lbs.)	14.25	0.16	0.03	0.19	0.33	0.05	15.01	2	180	13.6	2,448	16.8	4.56
	(%)	94.94	1.07	0.20	1.27	2.19	0.33	100.00						

CLOSING THE SETTING of the top edge of the front knife plate to the flats improved yarn appearance and reduced waste.

Setting			Delivery and Wastes in Pounds and Percentages							Card running time (hrs.)	Skein break	Yarn No.	Number x strength	Twist	Act. TM	Percent Variation		
Back	Center	Front		Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total							Card	Yarn	Integrator
29	68	187	(lbs.)	12.81	0.13	0.03	0.30	0.26	0.18	13.71	2	140	18.8	2,632	16.3	3.76	15.6	86	11.0
			(%)	93.44	0.95	0.22	2.19	1.89	1.31	100.00									
29	187	375	(lbs.)	14.44	0.10	0.02	0.29	0.27	0.19	15.31	2	141	19.1	2,693	16.2	3.70	16.4	87	12.0
			(%)	94.32	0.65	0.13	1.90	1.76	1.24	100.00									
10	68	187	(lbs.)	12.03	0.10	0.02	0.29	0.23	0.14	12.81	2	138	19.2	2,650	15.8	3.61	15.8	96	12.7
			(%)	93.91	0.78	0.16	2.26	1.80	1.09	100.00									

A CYLINDER-SCREEN SETTING of 29, 187, 375 produces a yarn of good strength and appearance with a saving in flat and cylinder strips. A cylinder screen with flanges that fitted up around the edges was used. Mills report that this setting produces "snowballing" at the edges of the web when this setting is used on screens without flanges. This condition is cured by closing the screen setting to 29, 68, 187.

Screen and settings		Delivery and Wastes in Pounds and Percentages							Card running time (hrs.)	Skein break	Yarn No.	Number x strength	Twist	Act. TM
		Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total						
Regular	(lbs.)	25.38	0.20	0.02	0.21	0.51	0.02	26.34	2	199	9.6	1,910	10.2	3.29
(29, 187, 375)	(%)	96.36	0.76	0.07	0.80	1.94	0.07	100.00						
Solid	(lbs.)	24.87	0.18	0.02	0.21	0.45	0.01	25.74	2	178	10.0	1,780	10.1	3.19
(29, 187, 375)	(%)	96.62	0.70	0.08	0.82	1.75	0.03	100.00						
Solid	(lbs.)	26.61	0.21	0.03	0.23	0.39	0.03	27.50	2	206	8.7	1,792	11.1	3.76
(29, 68, 187)	(%)	96.76	0.76	0.11	0.84	1.42	0.11	100.00						

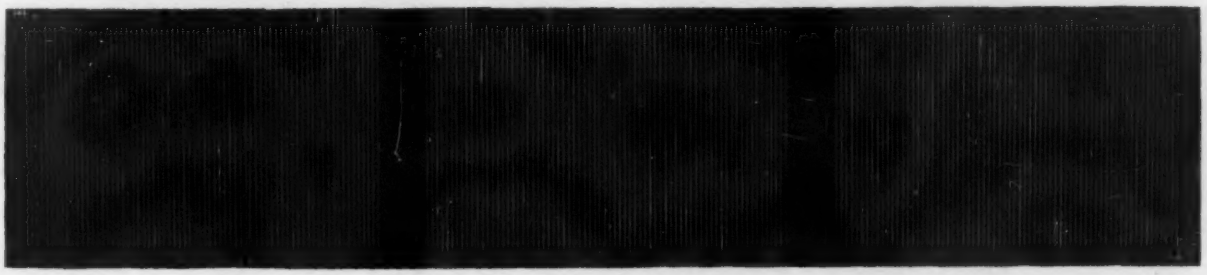
A SOLID CYLINDER SCREEN substituted for the normal grid screen produces a uniform yarn but decreases yarn strength substantially.

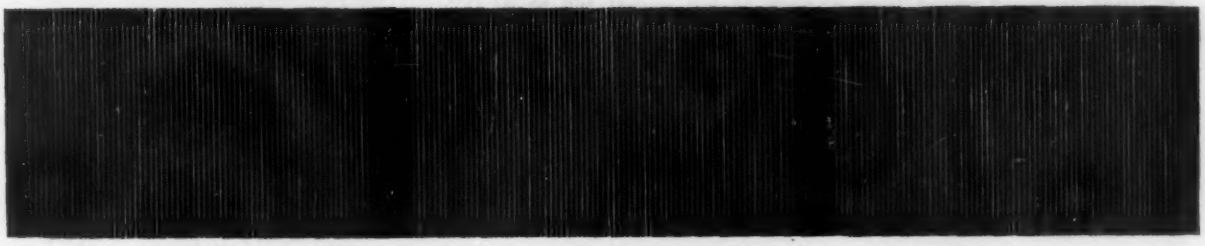
No. mote knives		Delivery and Wastes in Pounds and Percentages							Card running time (hrs.)	Skein break	Yarn No.	Number x strength	Twist	Act. TM	Percent Variation	
		Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total							Yarn	Integrator
2	(lbs.)	45.11	0.39	0.06	0.43	0.97	0.02	46.98	2	256	8.3	2,125	13.2	4.58	110	14.4
	(%)	96.02	0.83	0.13	0.92	2.06	0.04	100.00								
3	(lbs.)	46.76	0.38	0.05	0.41	0.71	0.02	48.33	2	256	8.3	2,125	13.0	4.51	90	13.8
	(%)	96.75	0.79	0.10	0.85	1.47	0.04	100.00								

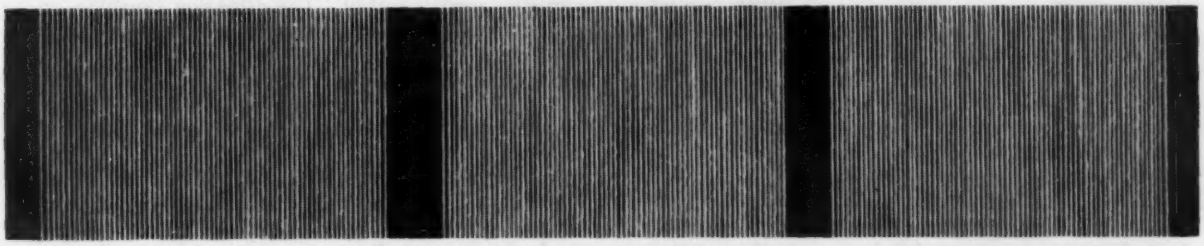
ADDING A THIRD MOTE KNIFE decreases the space through which fly waste may flow and improves yarn appearance.

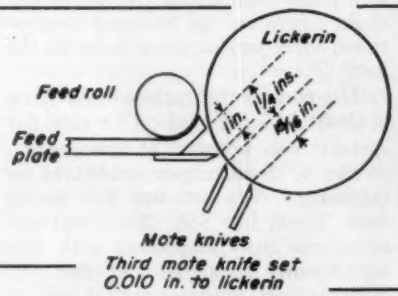
Back-plate setting			Delivery and Wastes in Pounds and Percentages							Card running time (hrs.)	Skein break	Yarn No.	Number x strength	Twist	Act. TM	Percent Variation		
Top	Bottom		Sliver	Cylinder	Doffer	Flats	Fly	Scavenger	Total							Card	Yarn	Integrator
22	22	(lbs.)	45.32	0.29	0.06	0.77	1.12	0.22	47.68	2	260	7.8	2,028	13.3	4.77	18.3	99	14.8
		(%)	95.05	0.40	0.13	1.61	2.35	0.46	100.00									
22	68	(lbs.)	45.31	0.31	0.06	0.77	0.98	0.03	47.46	2	251	7.9	1,983	13.4	4.77	17.6	96	14.6
		(%)	95.47	0.65	0.13	1.62	2.07	0.06	100.00									
22	78	(lbs.)	44.87	0.31	0.06	0.74	0.86	0.02	46.86	2	263	7.5	1,973	13.6	4.96	10.3	100	16.1
		(%)	95.75	0.66	0.13	1.58	1.84	0.04	100.00									

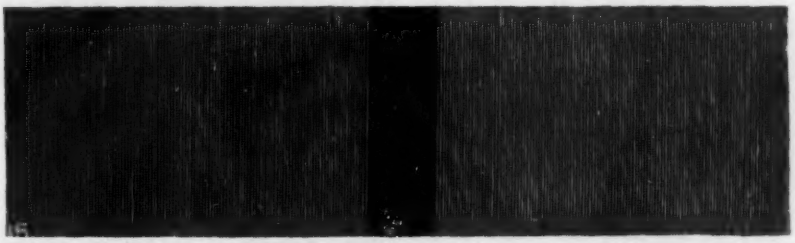
BOTTOM OF BACK KNIFE PLATE controls the escape of air from the lickerin to the cylinder. Closing this setting lowers the amount of fly waste. To achieve this wide setting at this position, it is necessary to move the lickerin cover closer to the feed roll.

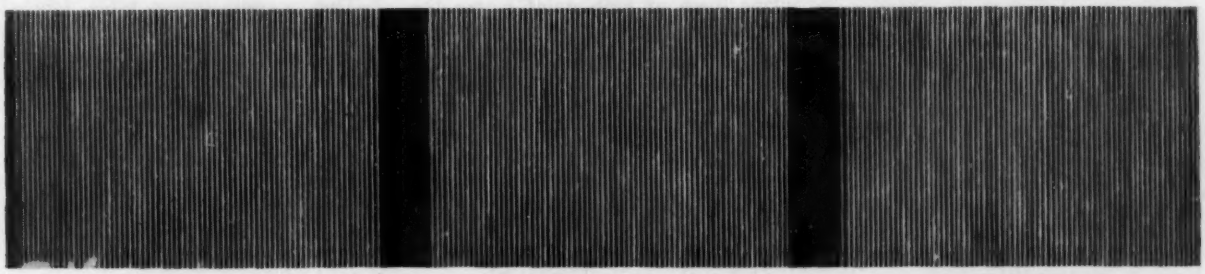







Lickerin
Feed roll
Feed plate
1 in.
1 1/8 ins.
7/16 in.
Mote knives
Third mote knife set
0.010 in. to lickerin





Two Mills' Experiences—

Swift Mfg. Co. Saves $35,000 A YEAR

Swift Mfg. Co., Columbus, Ga., one of the six mills sponsoring the card-waste-reduction study at N. C. State, gets these results from the carding techniques recommended—

- **$35,000 will be saved in one year on 100 cards**
- **Sliver delivered raised from 95.65% of lap weight fed to 97.19%**
- **Equal or better results on neps, yarn evenness and break factor**

By E. A. BENTLEY, Vice President, Swift Mfg. Co.

The cotton to which we refer here is Low Middling. Our machinery organization, prior to the card, is as follows:

Opening Room—We use five blending feeders to each feeding line. Following the blending feeders, we go into an SRRL opener. In our main cleaning line, we have a #11 condenser, #12 opener, #11 condenser, #12 opener, #11 condenser, and a Superior cleaner. This line makes a total of four cleaning actions through which the cotton is subjected.

Picker Line—Following is the machinery organization: hopper feeder, Superior cleaner, Saco-Lowell hopper, three-blade beater in the breaker section, two-blade beater in the intermediate section, and Kirschner beater in the finisher section. Our picking is possibly different from most mills in that we process a lot of stock-dyed cotton.

Up to the card, the cotton passes through four cleaning actions in our opener room and four in the picker room—a total of eight cleaning actions—plus the auxiliary equipment such as blending feeders and hoppers, which, in each case, gives a little better opening and blending of the fiber.

Cards—The cards on which we made our experiments are Saco-Lowell and we use a 17-oz. lap. They are run at a rate of production of 20¾ lbs. per hr., with a lickerin speed of 790 rpm.; and each card is equipped with a continuous stripper. We do not have a vacuum-stripper system but hand-strip our cards once every 24 hrs. Our grinding and setting cycle is once every 21 operating days; and at this time the flats, cylinder, and doffer are lightly ground and completely reset.

Other characteristics that might be interesting are that we have a 14-in. can, ball-bearing comb boxes, 100s wire on the cylinder, and 110s wire on the doffer and flats. Our cylinder speed is 168 rpm.

Vibration Pads Helped

We used about every setting in the book; not intentionally, but for some reason or another, every time we would go down and do a good job in checking these settings we would find the story a little different from what we intended. We did not experience too much difficulty at first; but during the course of this experiment, we did find it best to start at the ground and try to do just a little better job than we had been doing as far as alignment and settings were concerned. We were doing possibly as good a job as the majority of mills; and in order to improve, we thought it best to go out and get some little rubber pads and place them at each point where the card came in contact with the floor. These pads absorbed most of the shock and vibration and was one of the most important parts of our project.

These rubber pads, plus better alignment, helped us immensely to get almost any setting that we thought we could use and helped us to bring our settings nearer the ideal settings recommended by N. C. State.

One of the main objects with us was to get a practical drive from the cylinders to the flats. After several different installations, we now have one that looks good on the card and performs well. The drive now originates at the cylinder shaft, or at the same place the old drive originated, except that we have removed the original pulley. From the cylinder shaft, we drive to an idle shaft located just above the cylinder. On this shaft, we have a flat-face pulley and a V-belt pulley. The flat pulley is the driven pulley, and the V-belt pulley is the driver pulley. From this point, we drive directly to a V-pulley located on the worm-gear shaft, where we use the same conventional arrangement from there to the flats.

The cost of the material and labor is about $15 per card. Our new flat speed is ¾ in. per min. as compared to to the 4/10 in. recommended to us originally. We cut our flat speeds from 3 ins., or 75%. From our observations and discussions with our maintenance men, we find that our cards are performing as well as ever.

Here Are Swift's Settings

The accompanying table labeled Organization shows N. C. State's settings, our new settings, and our regular settings. The Swift new settings are the ones we finally adopted.

You will note that our setting is different on the mote knife to lickerin. We found that we could get better results with a 10 and 10 rather than the 7 and 7 shown by N. C. State. On the mote knife to bars, we set at ½ in. instead of ⅞ in.

Our lickerin-screen settings all vary

from N. C. State's because we found our regular settings still gave the best result.

On our back plate to cylinder, we found that a 34 and 34 setting was better than the 22 and 68 recommended.

Our flats to cylinder are set 10 all the way, since we do not feel that in production we could maintain a 7.

On our doffer combs to the doffer, we set to a 22, which is our normal setting, instead of the 17. This setting is better for us, probably because of our high rate of production.

On the cylinder screen to cylinder, we set to a 29, 34, 68 instead of the 29, 68, 187 settings recommended by N. C. State.

Here Are the Results

The accompanying table labeled Card-Waste Tests shows our results in comparison with N. C. State's.

Our tests show that our flat-waste percentage was 1.15, while N. C. State's was 0.66. Our fly percentage was 1.14, compared to N. C. State's 1.57. You will note that our fly waste from our original settings was reduced from 2.01% to 1.14% and our flat strips from 1.74% to 1.15%. Our scavenger waste remained approximately the same; doffer waste remained approximately the same; and cylinder waste came down from 0.25% to 0.18%.

Our new settings and slow flat speeds deliver sliver in the can equal to 97.19% of the net lap weight fed to the card. Our old delivery was 95.65%. The difference is a gain in sliver of 1.54% of the lap weight fed to the card. This figure in itself does not sound too large; but when you figure on processing over 400,000 lbs. per week through the cards, you can calculate easily what this saving would come to in a period of a year.

These tests were made on 10 cards; and we anticipate now, since making these tests, that we will go to 100 cards with these settings. We have made exhaustive tests on our quality and find that our nep counts are within the tolerance accepted and are running somewhat below our established standard. Our yarn-evenness variation is running at 87 to 100%, which is equal to, or better than, our normal production. The break factor is holding its own, ranging approximately 1,950 lbs.

Our cotton is costing us approximately 35¢ per lb., whereas we get only 6¢ per lb. for fly and 18½¢ per lb. for strips. With these figures in mind, you can see that when the 100 cards are converted we will save approximtely $35,000 per year.

Manufacturing Organization

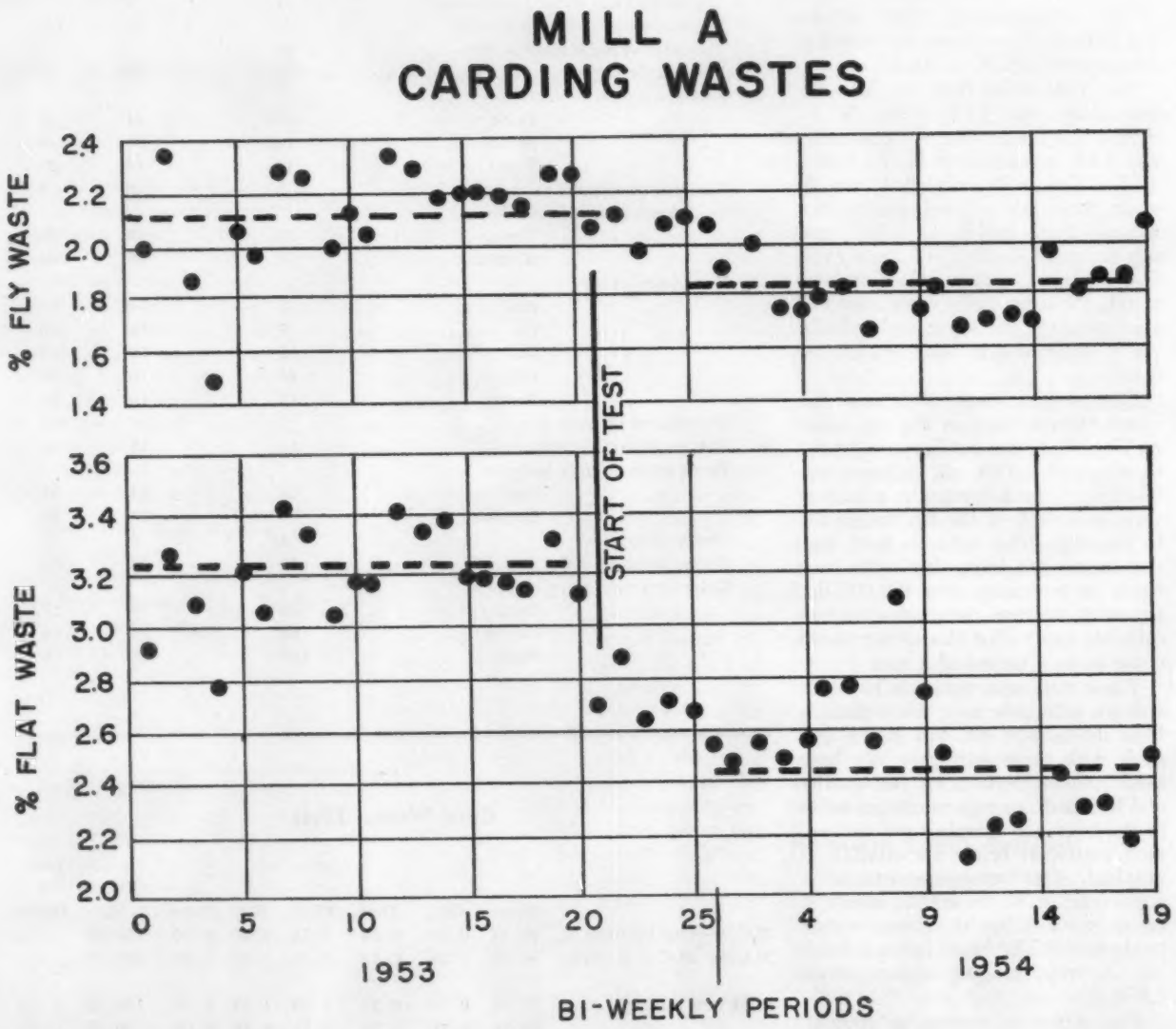
	N. C. S.	Swift	
		New	Regular
Make of card—Saco-Lowell			
Wire size			
Lickerin (points per in.)	32	32	32
Cylinder	100	100	100
Doffer	110	110	110
Flats	110	110	110
Speeds			
Lickerin	800	800	800
Cylinder	165	168	168
Doffer			
Flats (ins. per min.)	0.40	0.75	3.00
Settings (1,000th in.)			
Feed plate to lickerin	12	12	10
Mote knife to lickerin			
Top	7	10	12
Bottom	7	10	10
Top mote knife to feed plate (ins.)	1	1	...
Bottom mote knife to bars (ins.)	⅞	½	1¼
Top edge of back plate to flats	10	...	...
Mote-knife angle	30°	30°	30°
Lickerin screen to lickerin			
Back	10	34	34
Middle	10	34	34
Front	10	34	34
Lickerin to cylinder	7	7	7
Back knife plate to cylinder			
Top	22	34	29
Bottom	68	34	34
Flats to cylinder			
Back	7	10	10
Int.	7	10	10
Int.	9	10	10
Int.	10	10	10
Front	12	10	10
Continuous stripper (ins.)	...	1¼	1¼
Flat stripping comb to flats	15	15	22
Front knife plate to cylinder			
Top	34	34	34
Bottom	34	34	34
Doffer to cylinder	5	5	7
Doffer comb to doffer	17	22	22
Cylinder screen to cylinder			
Back	29	29	17
Center	68	34	34
Front	187	68	64

Card-Waste Tests

	Sliver	Cyl.	Doff.	Flats	Fly	Scav.	Total %	Loss or Gain
N.C.S.—Our Settings	95.84	0.28	0.10	1.78	1.90	0.10	100.00	.....
N.C.S.—N.C.S. Settings	97.28	0.29	0.12	0.66	1.57	0.08	100.00	.....
Swift new settings	97.18	0.16	0.33	1.10	1.33	0.05	100.15	+.15
	96.61	0.27	0.35	1.17	0.93	0.05	99.38	−.62
	97.77	0.117	0.127	1.17	1.17	0.053	100.41	+.41
Average	97.19	0.18	0.27	1.15	1.14	0.051	99.98	−.02
Swift regular settings	96.40	0.09	0.23	1.71	1.64	0.05	100.12	+.12
	94.89	0.40	0.32	1.77	2.38	0.06	99.82	−.18
Average	95.65	0.25	0.28	1.74	2.01	0.06	99.99	−.01

Two Mills' Experiences–

SAVINGS at One Mill Would Be $25,000 a Year



CARDING WASTE in one mill that applied these recommendations to half its cards dropped 1.06%—from 6.36 to 5.30% of lap weight. As shown in these diagrams, fly waste dropped 0.29%, from an average of 2.13 to 1.84; flat strips dropped 0.77%, from 3.23 to 2.46.

If card sliver is valued at 40¢ a lb. and the resale value of waste is taken into consideration, the net saving at this mill is about ¼¢ per lb. of lap fed. If all the mill's cards were run as the half are run according to the recommendation given here, the saving would be doubled; that is, waste saved would be 2.12%, amounting to about ½¢ per lb. of lap fed. At a production of 100,000 lbs. of laps per week, that would amount to $25,000 a year saved.

TUFTED RUGS—

A Handicraft Becomes A Branch of Industry

- **Dalton, Ga., the seat of decorative tufting, since World War II has seen its hand skill turned into a booming branch of the textile industry.**
- **Two technical advances made this blossoming possible: successful rug-tufting machines and latex backing to lock the tufts in the backing fabric.**
- **On these pages we present—**
  - **A brief background on tufting**
  - **How tufted rugs are made**
  - **How they are finished**

DALTON, GA. (10,000 pop.), is about 30 miles from Chattanooga, Tenn., as you drive toward Atlanta. If you've made that drive on Highway 41, you've seen many colorful tufted bedspreads (called chenille) displayed along the road to attract business from passers-by.

That was the beginning of what in the last few years has grown into important textile production.

What Tufting Is

The tufting process is a variation on sewing and knitting; a piece of yarn is pushed through a fabric, caught by a latch and held, and withdrawn through the fabric.

For years, the tufted fabric was then washed and allowed to shrink to lock the tufts in the ground fabric. The tuft could be either loops or cut pile. Designs could be varied and any colors of tufting yarns used.

Machines Were Built

As demand for tufted products grew, machines were built — first a portable electric hand-tufting machine, then a multirow machine, and finally a frame-type machine (called a yardage machine) that tufts the whole width of a fabric.

Factories were built to make chenille products; and in 1945, when the first precision-built yardage tufting machine went in Art-Rich Mfg. Co., Dalton, tufted rugs were just around the corner. Georgia Rug Mill, Summerville, Ga., soon put a machine similar to Art-Rich's on rugs.

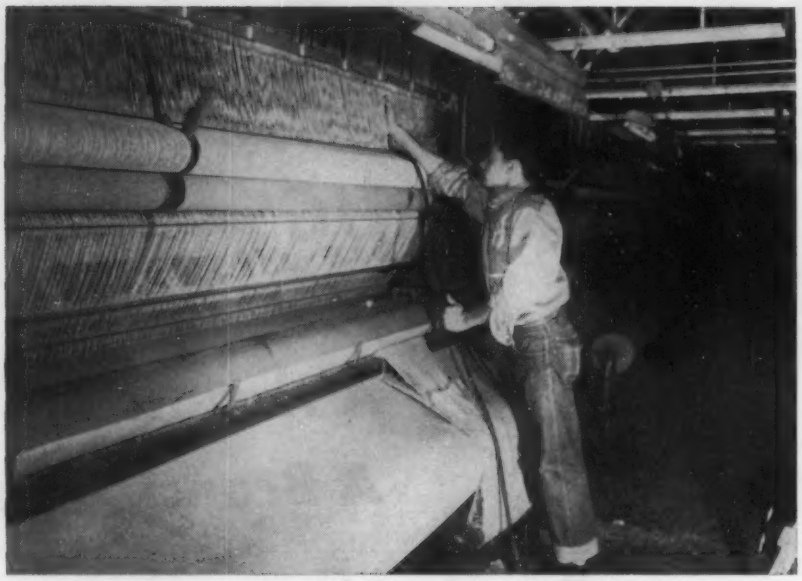
Besides shrinking the backing fabric, rug makers also coat the back of the carpeting with a latex solution to lock the tufts in place.

Barwick Added Glamor

Last year, this young branch of the textile industry got wide publicity because of a human dynamo named Eugene T. Barwick, a 41-year-old native of Florida, graduate of the University of North Carolina, and for 12 years an employee of Sears, Roebuck & Co. In 1949, Barwick set up his first tufted-carpet mill at Chatsworth, Ga., with less than $5,000 capital. In four years, he ran that up to five mills that produced $30-million worth of carpeting in 1953.

The accompanying articles on how tufted rugs are made and finished give the methods used at the Barwick Mill in Lafayette, Ga. For other articles on this type of rug, see TW, Jan., '54, p. 93, and Feb., '54, p. 126.

Tufted Rugs



BROKEN YARN END calls for a signal by the operator so that the creeler can find one end among 1,500.

How Barwick Mills

- Speeds are 550 stitches per minute
- Cotton and synthetic fibers are used
- Employees pool jobs to keep machines running

By RICHARD B. PRESSLEY

Associate Editor, TEXTILE WORLD

THE LAFAYETTE, GA., plant of E. T. Barwick Mills, Inc., is producing carpets by the tufting process on wide tufting machines. Most carpets made at this plant (Barwick has five mills) are finished at 12-ft. and 15-ft. widths. The mill has been in operation two years.

Several Fibers Are Used

Most tufting yarns used are 100% nylon; 100% viscose; 80% viscose and 20% nylon; and all cotton. Nylon yarns are usually in 6-lb. cones. Viscose yarns are two- and three-ply, and cotton yarns are four- and six-ply in 10-lb. cones. Both stock-dyed and undyed yarns are used. Most nylon yarns are stock-dyed.

A woven jute backing is used for the carpets. Duck fabrics have been used for limited production, but jute backing does a better job in production and also makes a better finished carpet. Ducks are hard to control in production because they aren't firm enough and are not usually made wider than 12 ft. Consequently, a rug wider than 12 ft. has to be seamed after it's tufted and a small ridge is left. For these reasons, Barwick now uses jute backing.

The tufting process involves a lot of hand labor, even though the machine, made by Super Tufter Machinery Co., is fully automatic and operates at 550 rows of stitches per minute. Most of the hand work is involved in creeling. Frequent style changes and the necessary creeling account for most of the labor involved.

Creel Holds 12 Tons of Yarn

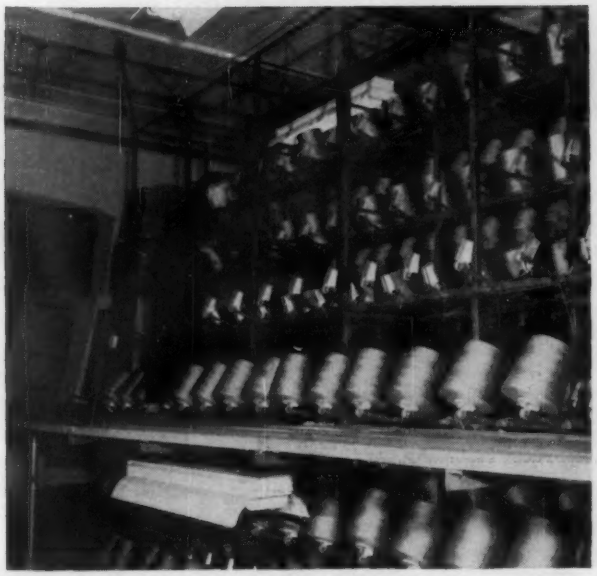
In comparison with conventional textile machinery, the creels are enormous in size. A carpet 15 ft. wide at the tufting machine requires 1,227 needles. Each needle is fed by a cone of yarn, but Barwick uses two cones of yarn for each needle because pigtail creeling is practiced. When cotton yarns are used, the 2,454 10-lb. cones, including the pigtail yarns, weigh 25,540 lbs.

The creel to hold this amount of yarn is approximately 50 ft. long and has two decks, each 8 ft. high. The upper deck of creels is serviced from a catwalk, which connects the creels for seven tufting machines.

How Creeling Is Done

Even though creeling is a labor-consuming job, Barwick has developed methods to creel in a new carpet set with a minimum of machine downtime. When a machine is to be creeled, up to 15 employees do the work. Regular creelers are aided by employees taken from other jobs for a short period.

Cones of yarn are set on the type of cone holders used on conventional warpers. A ¼-in. copper tube runs from each cone to the tufting ma-



AIR-PROPELLED broken end is found quickly by the creeler 50 ft. away from the machine on the upper-creel catwalk.

PIGTAIL CREELING is made by unraveling ½ in. of the two ends to be joined and gluing them together.

Makes Tufted Rugs

chine to carry the end to the machine. The yarn ends are threaded through the tube by rolling the end of the yarn in a loose ball, placing the ball over the end of the tube, and applying the end of a compressed-air nozzle to the tube. The yarn end flys rapidly through the tube, sometimes for a distance of 50 ft.

The pigtail end is fastened to the starting end of the second package of yarn by gently unraveling about ½ in. of the two ends and cementing them together with glue. No knots are left to break at the machine needles.

Tufting Yarns Penetrate Jute

The creeled ends are taken from the copper tubes and placed between rolls that feed the ends to the machine. Each end is threaded through three control or guide bars and through a needle after it leaves the rolls.

The woven jute backing material is used in 300- to 400-ft. lengths. A roll is set in stands at the creel side of the tufting machine and fed to the machine by pins in a feed roll.

The needles place the tufts in the backing in any desired length. Nylon pile is usually ⅜ in. long, cotton is ½ in., and other special carpets have a ⅝-in. pile. The pile can be left intact or cut as it is tufted.

Carpets of stock-dyed yarns are not tufted as wide as carpets of undyed yarns because there's more shrinkage of undyed yarns. Therefore, fewer stitches per yard are necessary with stock-dyed yarns.

Pin-Roll Take-up Is Used

After the tufts are placed in the backing, the carpet is pulled from the machine by a pin roll mounted between two plain rolls with a clearance between all of them.

Then the carpet goes under a 2-ft.-wide bridge mounted on a welded-pipe stand. From the bridge, the carpet goes up a 12-ft.-high vertical frame of welded I-beam construction, where it is inspected on both sides. Then the carpet is placed on a platform

CONTINUED ON PAGE 242

INSPECTING AND REPAIRING take place as soon as the carpets are tufted. The inspector cuts loops replaced by a repair gun.

How Barwick Dyes Tufted Rugs

At LaFayette, Ga., Barwick Mills dyes rugs in open width for a finished width of 9 to 15 ft. Some of the problems that had to be solved included—

- **Ways to prevent side-to-center shading**
- **How to keep the rugs opened to full width in the dyeing machine**

By ROBERT W. PINAULT
Assistant Editor, TEXTILE WORLD

THE DYEING of room-size tufted rugs has required new techniques and machine modifications to overcome the difficulties of handling the heavy carpeting.

Special Becks Are Required

At Barwick the dyehouse handles the dyeing and finishing of both stock- and piece-dyed rugs in specially constructed dyebecks similar to those used in wool dyeing. At the front, they are 6 to 7 ft. deep and have a false bottom made up of alternately perforated and solid plates. Steam and dyestuffs are introduced in the space between bottoms to insure even distribution of heat and color.

The breast roll is heavily scrolled and divided in the middle so that drifting of the rug from one side to the other may be controlled by operating one or the other half of the roll as needed. Control of this roll is automatic; as the rug drifts to one side or the other, it completes a weak electrical circuit when it touches a chain suspended in the beck. Actuation of the split breast roll may be entirely by electric motors for each half or by an electric brake and differential-drive system.

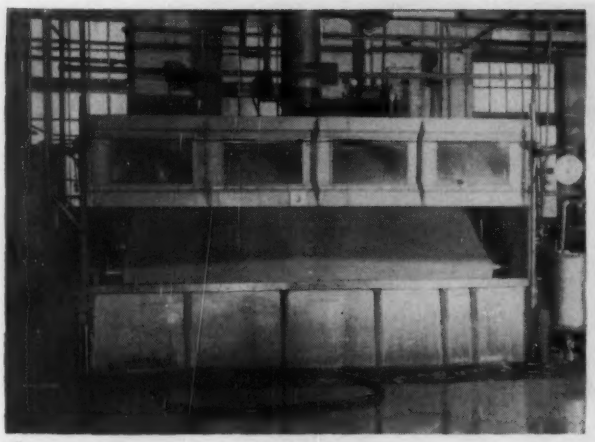
The main reel is cylindrical to permit the rugs to be carried through the liquor at speeds up to 120 yds. per min. without whipping. Barwick likes to turn over a 100-yd. piece at least once a minute during dyeing because the blanket effect of one dense piece of fabric extending across the entire beck tends to retard circulation.

One of the troubles that resulted from poor circulation was shading from side to center. After considerable experimenting, Barwick found that by introducing the dyestuff at the center of the beck, the dyeings came out even all across the piece. In conventional beck dyeing, every effort is made to distribute the dye evenly across the beck to get even dyeing.

Here's a Typical Piece-Goods Dyeing Cycle

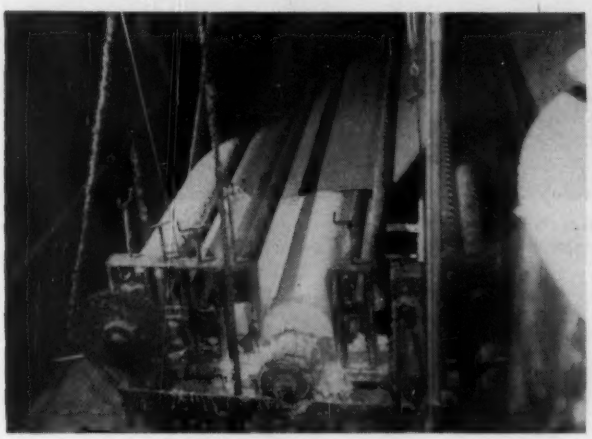
The lot to be dyed is first weighed so that the dye formulas can be figured. Weights will vary with the width, but a linear length of 300 to 450 ft. weighing up to 1,700 lbs. is the usual range for a beck load.

Viscose and viscose-nylon pile rugs are first given a scour at 180° F. with a detergent and soda ash or tetrasodium pyrophosphate for 30 mins.

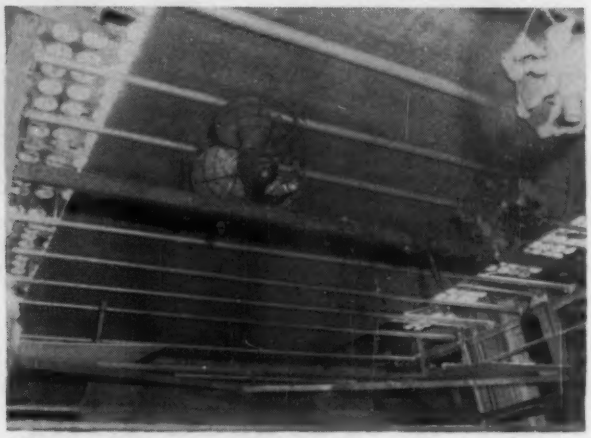


1 DYEBECKS that carry carpets at full widths are very deep and have false bottoms. Dyestuff is injected between bottoms.

2 A BEATER FLUFFS the face of the carpet as it enters the loop dryer after extracting. Beating helps dislodge loose fibers.



3 COATING THE BACK of the carpet with latex anchors the tufts permanently and adds weight.



4 CURING THE LATEX is accomplished with banks of lights and metallic heating units.

This bath is then dropped and a fresh bath set at 100° F. The required dye is boiled up in a 50-gal. stainless-steel drum, and a steam inspirator is used to force the dye into the beck.

The temperature is raised to 200° F. in 30 mins. through a Foxboro control unit that regulates steam flow. The load is run 30 mins. more, and then brine is added in three increments at 5-min. intervals. The steam is then shut off, and the goods are run 30 mins. longer and a sample is taken. If the shade is light, more salt or color is added and the dyeing continued at 200° F. until the carpet is on shade.

On cotton or all-viscose pile, direct colors especially selected for lightfastness are used. On nylon, premetallized dyes are used because they work well with the directs used in carpeting that is made of nylon and viscose.

Stock-Dyed Rugs Are Scoured and Finished

Barwick's best grade of cotton or viscose carpeting is made from vat-dyed stock. These rugs are inspected after tufting and repairs made to small areas that were missed by the tufter and imperfect loops cut or trimmed. They are then loaded into a beck and scoured at 160° F. for 30 mins. to remove any soil picked up in manufacturing.

The scour bath is dropped and a new bath set at 110° F. For viscose-pile rugs, a polyvinyl-acetate emulsion of fairly large particle size is added to the bath at the rate of 8% on the weight of the goods. The carpeting is run for 20 mins. in this bath and picks up about ½% of solids in that time. Cationic softeners are applied to cotton rugs.

Because of the great weight of the wet rugs, a specially constructed unloading swing is required. The swing is mounted on a pair of I-beams that extend in front of six becks; it can be rolled along from one beck to another as needed. The dyed goods are swung into trucks and wheeled to the extractors.

Extracting Removes Excess Moisture

By means of powerful vacuum pumps, the water content of the carpeting is reduced to about 100% of the dry weight. Extracting, followed by beating and drying, is a continuous operation. A modified scutcher-beater

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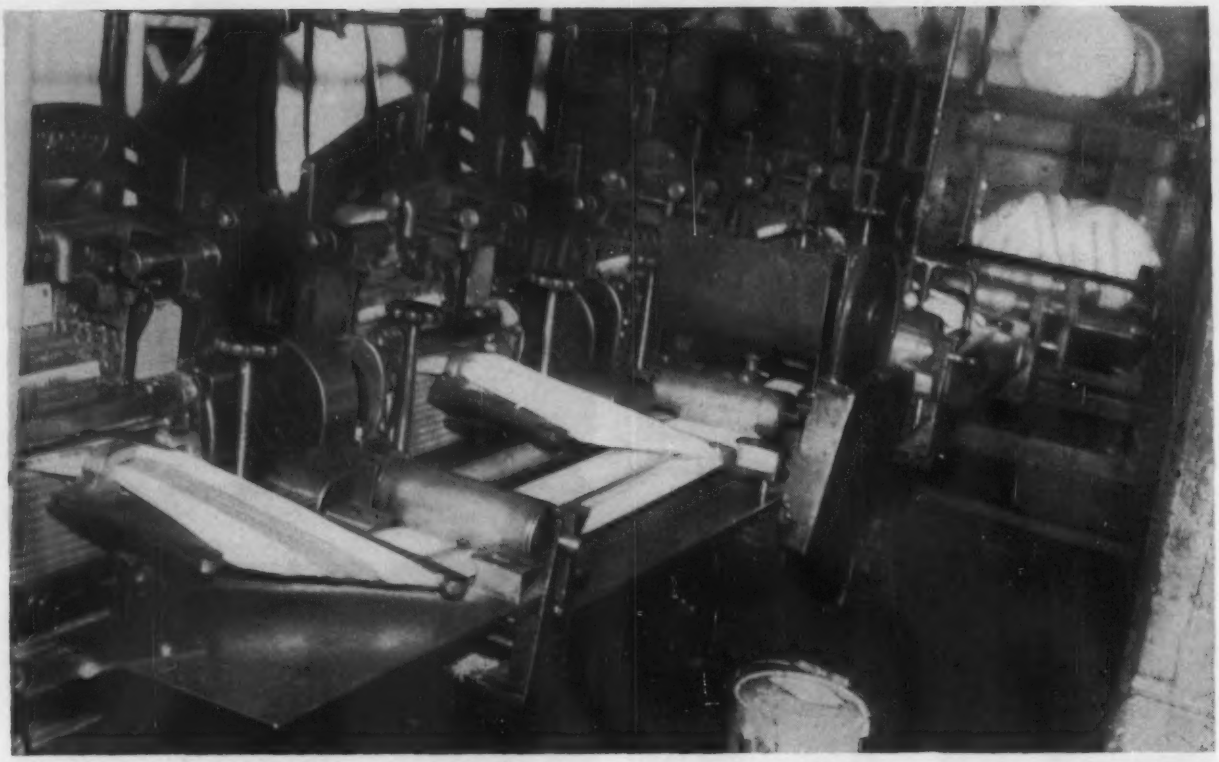

FOUR-HEAD MELANGER is used to make a balled sandwich mixture of tops for a worsted blend. Each head operates separately; and it's better to run three heads full than four heads light. An operator handles one machine; she cleans, creels, doffs, tickets, and keeps the emulsion trough (right center) filled from the water can or from a piped supply.

How a Worsted Mill MIXES TOP on Melangers

▶ This mill uses the weight-batch method to mix top on melangers. A premix to get equal weights of ends is made with as little left-over as possible. Emphasis is on good blending rather than production.

By **THOMAS B. WINSTON,** Assistant Editor, TEXTILE WORLD

A WORSTED PLANT with 25 years of experience in mixing top on melangers (intersecting gill boxes) uses a batch method based on weight units. Emphasis is on doing a good job of blending instead of production; the blending cost averages out at about 0.7¢ per lb., with a low of about 0.5¢ per lb. for long runs. Careful top blending is necessary to prevent barré filling and streaky warps.

The plant has eight four-head SACM melangers, with one machine per operator; the mixing process comes after dyeing and backwashing. The melangers are used on color blends, including all-white and all-black lots, bleached-white with straight-white wool, and synthetics-and-wool mixtures.

The color matcher makes out a blending sheet to prescribe the dye items to be blended. The melanger supervisor processes the blend, keeping in mind: (1) the capacity of the melangers (1,500 to 2,000 grains per head), (2) what draft the stock will take (5 to 7 draft is used), and (3) what weight is wanted for the first gill box in the drawing set.

Each blending problem has three parts: the premix, the basic mix, and left-overs. A blending plan to leave as little left-over as possible is drawn up—sometimes to give as little as 0.1% of left-over.

A premix is usually necessary to get equal weights of ends going on a machine. For instance, suppose a 75% white,

CREEL BARS are filled according to a mixing pattern sheet on each machine. The bars are also marked for the proper stock. Careful creeling according to lot number is essential for good blending. With the batch method, a premix (multi-colored ball) is necessary to get an equal weight of ends. No splicing is allowed.

12½% tan, and 12½% black mixture is to be made from 350-grain top. With 7,000 grains going to each machine, 20 ends could be used; but that would be 15 ends of white and 2½ ends of each color. Enough tan and black top has to be reduced to half weight to make up the basic mix. This premixing operation is done on one of the melangers.

How much premix is needed depends on the capacity of the machines, the number of ends, and the color combination. Too much premix would result in too much left-over stock, which has to be used in another premix.

Blending Plan Is Figured

Each blending plan must be figured out; each mix always varies in top weight or lot size. The mixing sheet carries the history of the batch: the pounds required for the mixing batch, the order number, mill division (sales yarn, men's wear, etc.), wool grade and staple length, whether for warp or filling, original white-wool-lot number, color-shade number, dye-lot number, batch number, spun-yarn number, roving number, drawing-lot number, and finally a blending-sheet number.

Poundage is figured from the weight on the spool ticket. A 32-spool dye lot weighing 320 lbs. as white stock might actually weigh more or less because of moisture variation from the backwash dryers. The actual weight of the batch is checked, primarily to make sure all the batch is issued, but also to give the melanger supervisor both the theoretical weight and the actual weight.

The mixing batches vary from 40 to 15,000 lbs., but the actual poundage depends on the blending plan. A 30,000-lb. dye lot might be broken into two, three, or even five sections.

About 30 ends, with 240-grain sliver, is the maximum end loadage on a machine.

Melanger mixing is a multishift problem and requires close cooperation between shift supervisors and shift operators. Each supervisor uses the same method of operation, and a record of work in progress is kept in a book. Every spool of top is identified with a ticket printed on cheap poster paper; and on through the plant, every bobbin is identified. There is no room for guesswork in mixing; a bad mix will make fabric defects with mathematical precision.

When a new shift comes on, the incoming supervisor checks the work book with the outgoing man to see what work is running.

The operator checks every spool on her machine before she takes over. If she finds something wrong and the operator she replaced has left (which seldom happens before the incoming operator takes over), all completed spools are pulled back, the work broken off, and another run started on the machine. The work held back is straightened out by the operator who was running the work last and her supervisor.

Checking Is Easy

A pattern sheet is hung on the machine, and each spool bar is marked with the color combination; so the operator can easily check how many ends go where.

Duties of the operator: she replenishes the emulsion as needed; puts up all spools, doffs, tickets the balls, and puts them in a truck; and cleans the machine as needed. She must lay every end in, and no splices are allowed. Work is brought to her and taken away.

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CHARLES R. BOLLIN, assistant superintendent of John P. King Mfg. Co., Augusta, Ga., led the discussion on maintenance.

Georgia Mill Men Plan For BETTER MAINTENANCE

▶ Repairing breakdowns to equipment isn't good enough. Mill men are inspecting, cleaning, and repairing equipment by planned schedules.

AT A RECENT MEETING at Georgia Tech, members of the Textile Operating Executives of Georgia told how their maintenance men are keeping machines and equipment running by planning work to be done day by day.

Labor Costs Are 2.8 to 9%

First, mill men are interested in maintenance-department labor costs. Eight of 11 mills reporting on their maintenance costs for carding, spinning, and weaving, but not finishing, have figures to show the percentage of maintenance-department labor costs in comparison to the total plant labor costs. The lowest figure is 2.8% and the highest is 9%.

Broken down by mills, the reports are:

Mill A—"Our labor costs are approximately 2.8%. This figure includes the operation of the machine shop, installation and repairs of electrical equipment, and repairs and adjustments to the mill humidification system."

Mill B—"Labor costs for machinists, carpenters, blacksmiths, welders, pipe fitters, electricians, watchmen, men who cover rolls, boiler tenders, humidifier men, men who clean lights, and laborers are 3% of the total plant labor costs."

Mill C—"Our costs are 3.9% and cover repairs of all equipment (exclusive of production machinery), carpenter work, humidification, and boiler-room upkeep."

Mill D—"Our costs are 6%. The costs cover general repairs in the mill such as carpenter work, gear cutting, electrical work, etc."

Mill E—"Our maintenance-department costs of 6.5% include all work done by the machine-shop employees, blacksmith, electricians, humidifier men, power-plant and heating workers, painters, and carpenters. This work also includes maintenance of deep wells, which furnish water for the mill village."

Mill F—"Our costs are 9%. Maintenance embraces the machine shop employees, watchmen, electricians, carpenters, painters, and humidifier men."

Costs for the two other mills are 6.75% and 7.98%.

The other three mills reporting on the subject do not have records available to give their maintenance labor costs.

Ten mills have a planned and systematic program for inspecting electrical equipment. The programs of four mills are:

Mill A—"We have one electrician who spends his entire time checking motors and other electrical equipment throughout the mill."

Mill B—"A master checklist is used, and orders are issued to electricians on dates inspections are due. Minor repairs are made during the inspection, and major repairs are listed for future work.

"Oil-ring motors are inspected weekly. Sleeve-type-bearing motors are inspected from once a month to once every two months. Motors with ball bearings are inspected every six months. Motors in dirty locations are blown out each week.

"All motor switches are checked every six months. Oil switches and transformers are thoroughly checked every year."

Mill C—"All large motors in our mill are inspected with feeler gauges each week. Small motors are inspected visually when they're lubricated. Motors with sealed bearings do not require frequent lubrication and are checked at longer intervals.

"Wiring and switchgears are given visual inspections frequently."

Mill D—"Loom motors are blown out and cleaned thoroughly every 30 days. Motors in other departments are blown out every 15 days. All motors are oiled when it's necessary, but

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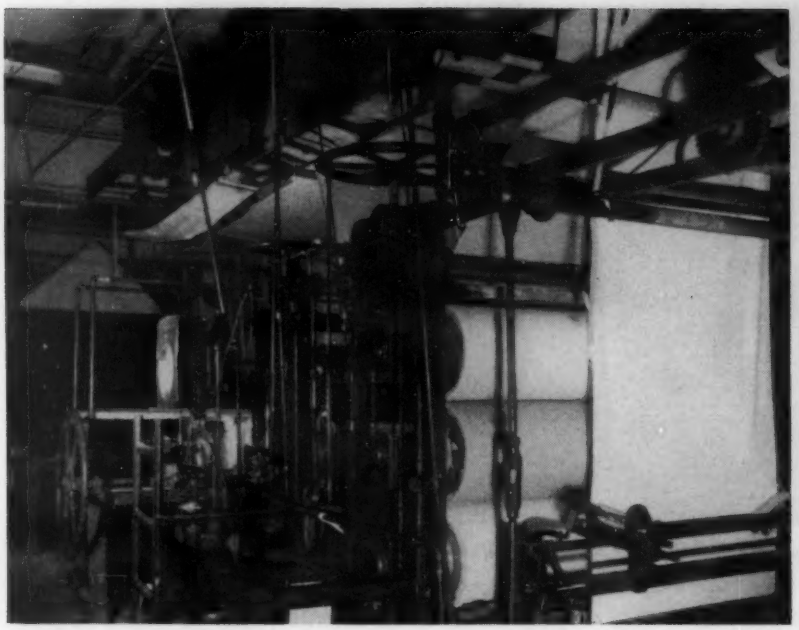
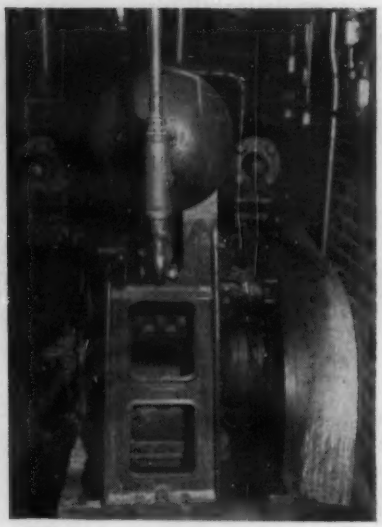


MERCERIZING RANGE processes fabrics from 18 to 60 ins. wide. The caustic, through refrigeration, is kept at 90° F. to maintain uniform mercerization.



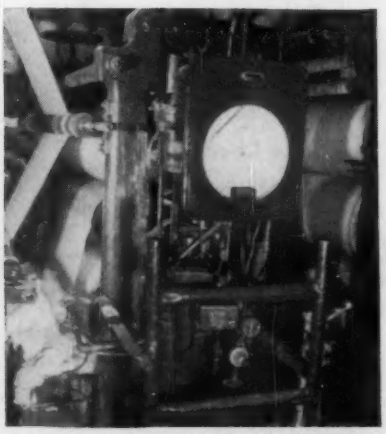
COOLING SYSTEM is composed of a 20-hp. compressor and a Freon refrigeration system. The caustic circulates between the pad box and the cooling system.

Refrigerated Caustic Helps Uniform MERCERIZATION

The caustic bath in the mercerizing range at Kerr Bleachery is kept at 90° F. by a cooling system. The constant temperature provides—

- **Uniform dyeing properties**
- **Maximum fabric luster**
- **Savings in caustic**

By MICHAEL LONDON
Assistant Editor, TEXTILE WORLD



FOXBORO DENSITY CONTROLLER governs the strength of the caustic, which is supplied at 50% and is usually diluted to 19% concentration.

THE MERCERIZING RANGE at Kerr Bleaching and Finishing Works, Inc., Concord, N. C., through the use of a refrigeration unit for cooling the caustic bath, is designed to produce mercerized cloth with uniform dyeing properties and maximum luster. The refrigeration equipment also lowers the cost of caustic by holding the caustic temperature down to 90° F. to get the maximum mercerizing power from the bath. Drills, draperies, poplins, broadcloths, and gabardines in widths of 18 to 60 ins. are mercerized on the range.

A Freon refrigeration system and a 20-hp. compressor comprise the cooling system. The caustic from the mercerizer constantly circulates between the caustic box and the refrigeration system at 75 gals. per min. A thermostat governs the output of the compressor and controls the temperature of the caustic, which is cooled over direct-expansion coils.

Control Gives Uniformity

By controlling the temperature and, subsequently, the mercerizing strength of the caustic, the refrigeration system helps produce a uniformly prepared fabric, and the dyer, confident that the goods have been properly prepared, can concentrate on his end of the processing without being constantly threatened with varying conditions in the cloth. A Foxboro density controller governs the caustic strength, and periodic titrations as-

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TEST LOTS from each knitting machine are checked three times weekly. Notice board on knitting machine shows code number of lot.

PROPORTIONED STOCKINGS are made to fit special form. Test lots are checked for heel length, leg length, and yarn and machine faults.

At Pilot Full Fashion Mills, Inc.

PROPORTIONED STOCKINGS

▶ Stockings made in four proportions require more rigid controls, but advantages are better-fitting hosiery with longer life

By **JAMES H. BLORE,** Associate Editor, TEXTILE WORLD

THE PROBLEM of better-fitting hosiery has been tackled by Pilot Full Fashion Mills, Inc., Valdese, N. C., with a new system of proportioned hosiery. The old system of a measured flat length was not satisfactory; so new proportions were worked out that took into consideration the width of the hose at various points.

The stockings are knitted to the shape of a special form so that the stitch is not stretched at any point when the stocking is on the preboarding form. The form was designed after many test stockings had been made and tested by Pilot's employees. The accepted form, which was made to size 9½, was worn by many employees and found to last three or four times longer than conventional-type hosiery of the same construction.

Four Proportions Made

Four proportioned stockings are made. They are:

Small, which have a narrower heel splicing, tighter welt, and a lower calf than conventional-type stockings. These stockings are knitted on fewer needles than conventional types. There are four lengths made from 27½ to 30 ins., and the foot sizes are 8 to 10½.

Average, which are made in seven leg lengths from 29½ to 33 ins. in foot sizes 8½ to 11.

Tall, which are made in four lengths from 33 to 34½ ins. and 9½ to 11-in. foot sizes. These stockings have a taller heel and a higher calf than the average stocking.

Extra-large, which are made on the full 14½-in. needle width, and made in leg lengths of 35½ to 37½ ins. in sizes 10 to 12.

The small and tall proportions were calculated from the average-proportioned stocking. The tall-type stockings are knitted with more needles in the calf and the small stockings with fewer needles.

A rigid system of size control insures that lengths, proportions, and foot sizes do not vary. Pilot Full Fashion Mills knits lengths from 27½ to 34½ ins. in ½-in. intervals with a tolerance of ½ in. each way.

Size control actually starts at the yarn supply, because yarn merge numbers are never mixed. When yarns are changed or any other modification is made to the stocking, a change is made to the style number.

One set of stockings from each machine is carefully checked three times each week. These test stockings have a special ticket, and they are immediately steam-set and seamed. Only one or two hours elapse between knitting and testing.

Two Girls Check Sizes

Size testing is done by two girls on forms made to the proportioned size. Heel sizes and length sizes are marked on the form, and the testers check the high-splice mark and over-all length against the standard.

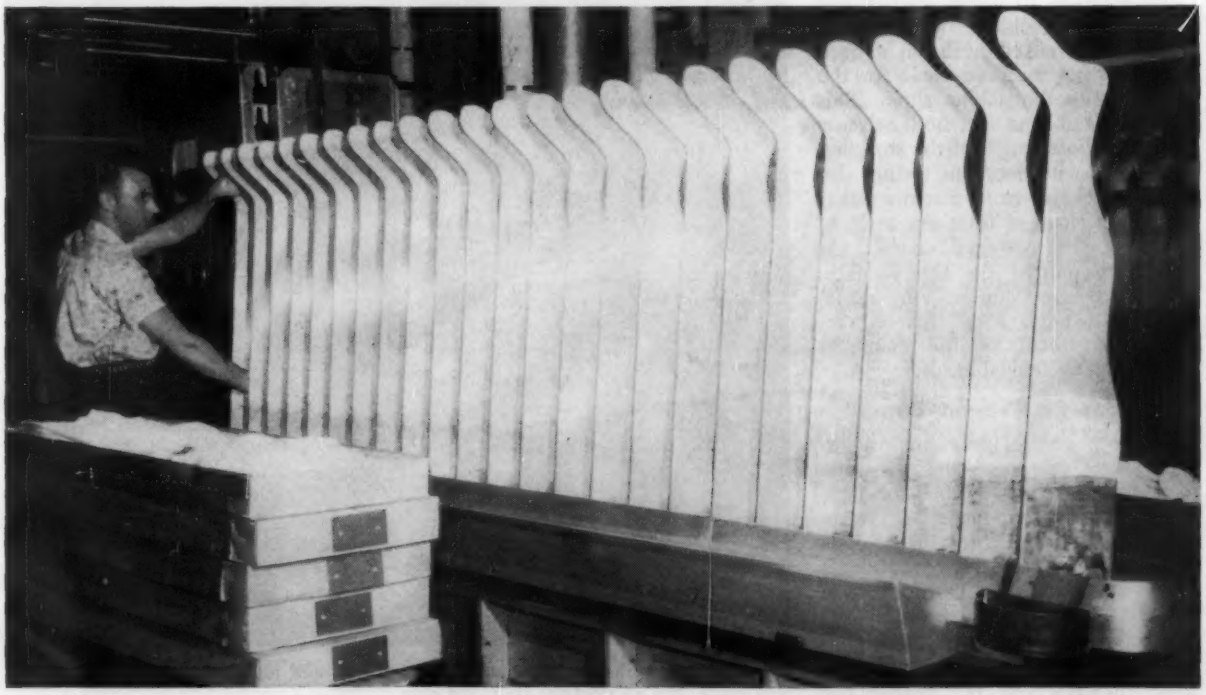
A check is given at the same time for yarn, machine, and seaming faults. A control chart is used for each set, and this chart shows the variations from standard in ¼-in. intervals. This record is handed to the knitting technician, who immediately makes any necessary adjustments to the knitting machine.

MISMATCHED SEAMS are prevented by testing the whole length of the stocking. A Rolandé test is made at change-overs.

Are Knitted To Fit

One test lot from each style is sent through the mill with a special ticket. This lot is given priority over other goods, and they are tested for size after final boarding. The final tester records the finished welt, heel, and over-all leg lengths, stretch, and volume.

This test is carried out with the heel against a metal form that is cut to the shape of the heel. The form is screwed to the bench, and it elimi-



LEG LENGTHS and proportions are all identical as they are taken from the preboarding machine. Grooves along foot edge keep seams straight.

FINAL BOARDING also requires special forms to suit the four proportions, which are short, average, tall, and extra large.

nates the variation in testing techniques.

The report is finally returned to the quality-control department. If variations are noticed between the first test and the final tests, checks are made throughout the mill, particularly in the dyehouse, where changes in finish may warrant knitting-machine adjustments.

In addition to these regular size checks, all stockings are checked weekly for crooked heels on a horizontal testing machine made for the mill by a local machine shop. This machine is able to test both selvages over the whole length of the stocking.

The girl who does this testing also checks stockings from machines that have been changed from one style to another. The stretched courses per inch are counted on the Fidelity-Rolandé course counter. Any deviation from standard on this test requires adjustments on the main star and not on individual heads.

Loose Courses Prevent Errors

To keep control over the proportioned sizes, one loose course is made in the welt on small-type stockings, two loose courses are made for average-type stockings, and three for tall-type stockings. A different colored ticket is also used for each proportioned size to prevent mixups.

A code system has been adopted to further simplify recognition of various styles and sizes. The code includes the style, proportion, modification to the style, size, and leg length.

A master style chart is kept in each department, and the code is rapidly deciphered. For instance, a red ticket with a letter and number on it immediately shows the preboarder what forms to use.

Special preboarding and boarding forms had to be made to suit the proportioned stockings. The forms have a groove cut along the center edge of the foot. The seams fall into the groove and splicings match up on both sides of the foot.

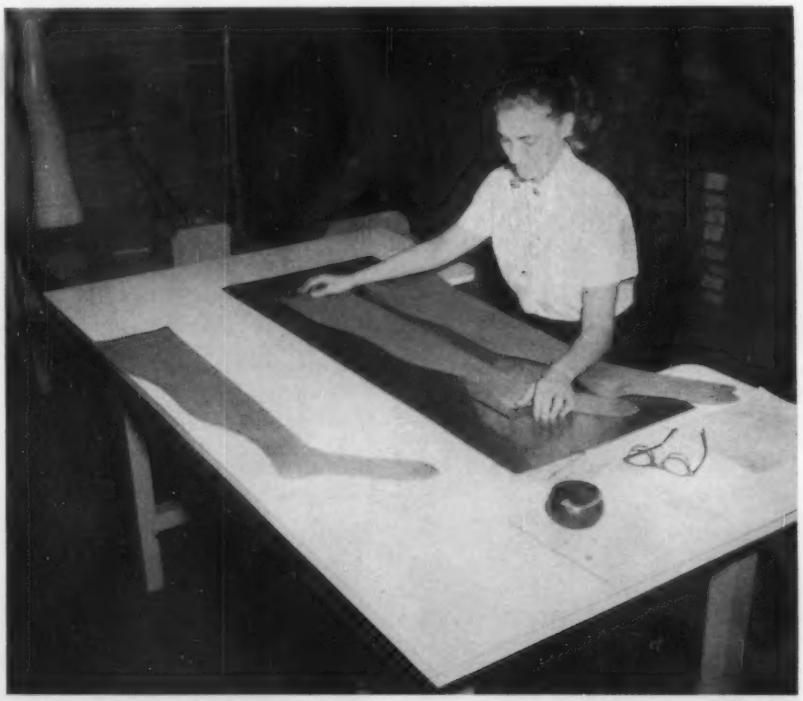
The size-control system helps preboarders because stockings do not have to be stretched on the form. When the stockings are removed from the forms, they are laid in long cardboard boxes for storage until dyeing.

Boxes Do Not Wrinkle Hose

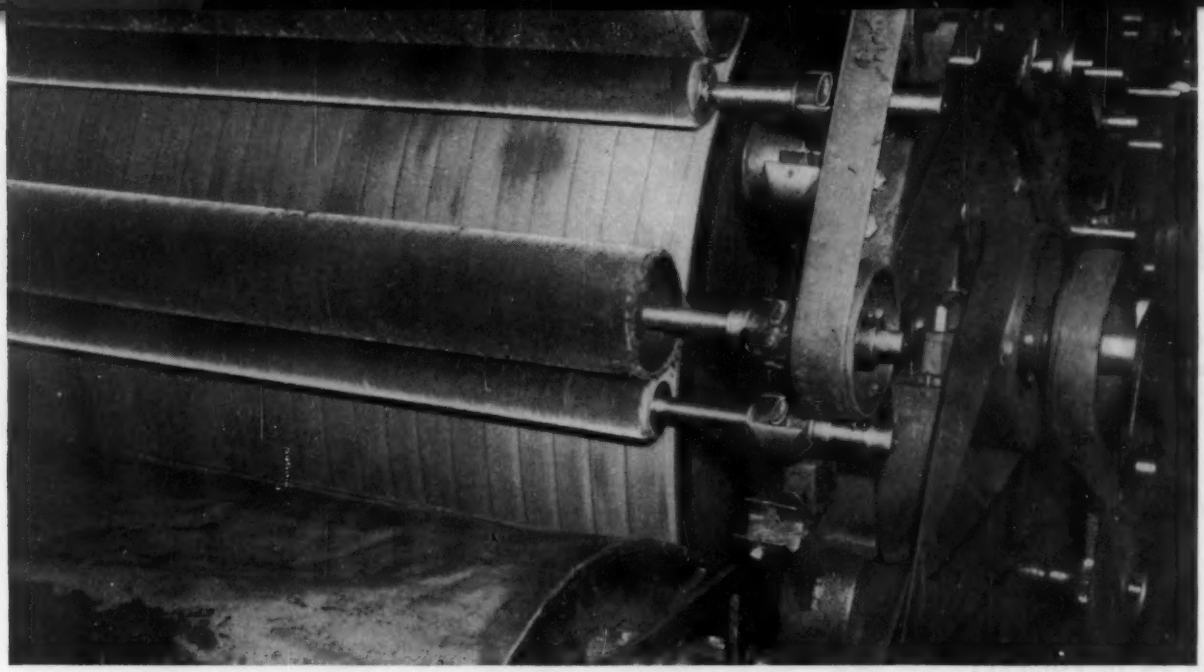
Each box holds 18 doz. stockings, and the boxes can be piled up high without wrinkling the stockings. The colored tickets are slipped into a holder on the end of the box to facilitate recognition.

The dyed and boarded stockings are provided with new tickets, which show boxing instructions. The same color code is used for the various proportions.

Pairing has been easier, and fewer rejects have been made since the control system was inaugurated. The proportioned stockings require more care in manufacture, but they are paying off in more satisfied customers.



FINAL TEST is made on bright metal base marked with leg, heel, and welt sizes. Heel form insures that all stockings are tested alike.



COARSE CLOTHING was put on the breaker cylinder June 2 and hasn't needed grinding yet. A 24-hr. stripping cycle with suction stripping is used on the greasy-mohair blend; and hand stripping is necessary every three or four months to clean out the grease.

How a Woolen Mill CARDS a Greasy-Mohair Blend

FANNING-OFF is required every hour or so to keep the cards clean. The card tender does this job with a homemade cardboard fan. According to the card-room overseer, running mohair requires constant attention to maintenance details and good housekeeping chores.

▶On three-cylinder card sets, the first breaker is set with a 24 gauge and the second breaker and finisher with a 26. Coarse kneeless clothing on the first breaker has required no grinding; stripping cycle is 24 hrs.

By THOMAS B. WINSTON, Assistant Editor, TEXTILE WORLD

ZIBELINE YARN, 1⅛- to 2½-run, is made at a New England woolen mill from a greasy-mohair blend on three-cylinder card sets with a coarse kneeless clothing, Tufferbrute No. 1, on the first breaker cylinders. The mill has 11 card sets, six 60x60- and five 48x60-in. sets.

Since the coarse clothing was installed last June, no grinding has been necessary and a 24-hour stripping cycle is used. The vacuum stripping method is used, and every three or four months hand stripping is necessary to remove the grease; then the cylinders strip easily again.

According to the overseer of the carding department, advantages expected of the coarse clothing are longer life, no grinding, and better stripping. The first breaker cylinders are run at 75 rpm. with a fancy speed of 512 rpm. (Average fancy speed used at this mill is about 500 rpm.)

Workers on the first breaker have either a 26/30 D. C. or 28-straight wire, and wire on the second breaker and finisher is the same as on the cylinders: 33 on second breaker and 34 on finisher.

The first breaker is set all the way with a 24 gauge, and a 26 gauge is used on the other two cylinders. Production is 65 to 70 lbs. per hr.

The mohair causes trouble by its ability to get tangled in the wire, and a lot of loose fiber collects on the cards; the cards are fanned off about once an hour by the card tenders. Running mohair requires good housekeeping.

Basic Methods for the SPINNING OVERSEER

► The overseer without a standards department must depend on basic spinning methods. Here are some tips on drafting, tapes, travelers, bobbin formation, maintenance, costs, and operator efficiency.

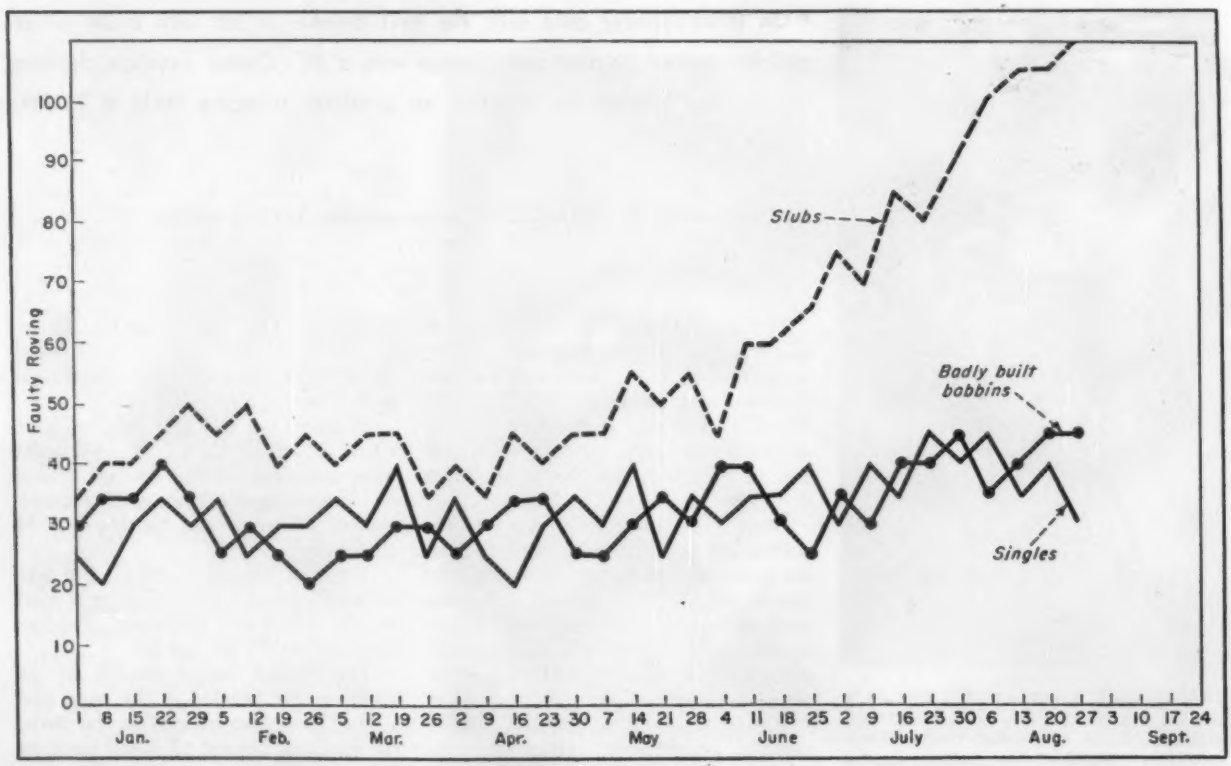
By N. H. POMFRET

THE SPINNING OVERSEER without a standards department has a good opportunity to demonstrate his value to his company. He must find weaknesses before they become serious enough to do real damage; he must correct them and then search for other weak spots. Attacking one problem after another, with quality, work, and production always in mind, the spinning overseer always has something to do.

No matter how expert the overseer may be, he cannot make good yarn from bad roving; so the first standard that must be established concerns roving quality. The spinner can show his friendliness to his colleague, the carding overseer, by pointing out quietly but consistently all roving defects found in the spinning department. By doing this, he helps the carding overseer do a better job.

Daily or weekly records of the main roving faults observed quickly establish standards. Any consistent trend in the wrong direction indicates when to start worrying and working on the problem.

The spinner's aim should be to pro-



ROVING FAULTS found in the spinning room can be charted to point out trends to the card-room overseer. This record on 2-hk. roving shows that slubs have been increasing consistently for several weeks.

duce yarn without introducing any more irregularity to the variation in the roving. The drafting arrangement must be in first-class condition, with clean rolls and aprons moving at a uniform rate; the overseer and his assistants must be constantly on the lookout for defective drafting.

It is a good idea to have a number of defective parts on exhibition so that section hands and spinners will know exactly what conditions cause substandard yarn. Such a display should include a bent bottom steel roll; eccentric front top roll; badly covered top roll; unmatched bosses on one arbor; dirty, waste-choked roll; badly worn weight saddle or weight hook; badly jointed top or bottom apron; apron of the wrong width; faulty cradle; and bent back-traverse guide.

A permanent notice of cleaning, oiling, and scouring schedules should be posted. Request spinners or section hands to notify the overseer if these schedules are not carried out on their frames. This practice implies that the operator's help is wanted; and as a result, the operator feels more a part of the organization.

Check Tapes and Travelers

To make sure that spindles are revolving at the desired speed, tapes should be checked occasionally to make sure they are the same length, thickness, and width. Section hands can check one or two frames per shift to see if the full width of the tapes is in effective use; the tapes should not rub on the whorl flanges.

The tape man can be taught to call the section hand's attention to tapes he finds rubbing on flanges. Doffers should be encouraged to throw out bobbins that fit too high or too low on the spindle; spinners should be instructed to report soft bobbins and vibrating spindles to the section hands.

All frames spinning the same type of yarn should have the same change gears and travelers. Travelers should be examined periodically; and the only way to do this job is to take off a few at random and examine the bearing surface. Records should be kept of traveler changing to make sure that no frames are missed.

It pays dividends to find out, by experimenting, which traveler type is best suited to the particular yarn and rings. You must decide which traveler type is most suitable, large or small circle, round or square point, etc.; and with the decision made, the particular type should be adopted regardless of the price.

With uniform drafting and twisting, there remains the problem of winding maximum and uniform lengths of yarn on the bobbins. The longer the length wound on each bobbin, the better. Yarn quality is improved by long lengths, and cost of processing is reduced.

At the same time, the overseer's enthusiasm for large packages must not interfere with the unwinding requirements of the package. He would do well to visit the winding machines to check the unwinding characteristics when the formation of the bobbins is changed.

Three requirements for making good bobbins are:

1. The stroke should be as long as possible without causing excessive end breakages at the top and without running under at the bottom.
2. The ring should be as full as possible without danger of rubbing in the ring which is caused by normal yarn-number or tape-tension variations.
3. The chase should be as short as is conventient without danger of sloughing off or running under bottom cones.

When the maximum safe distances have been found, gauges should be made and presented to each section hand; then each man can adjust his own frames. To reduce short doffs to a minimum, group frames with the same doffing frequency together.

Machine Maintenance

Yarn quality and machine maintenance are closely related, but cost determines how much maintenance is performed. From an economic point of view, too much maintenance can be performed as well as to little; so the overseer should concentrate on the basic essential conditions for good spinning:

1. The roller beam, spindle rail, and rolls should be straight and parallel with each other.
2. Spindles should be vertical and in the center of the ring.
3. The bearing surface on the thread guide should be directly over the center of the ring and spindle.

The most economical time to adjust three parts is when the machine is stopped for some other reason—scouring, for instance. The overseer can learn a lot about his department by spending time with the scourers examining roll bearings, spindle bolsters, tension pulleys, etc. With experience, he soon learns to judge the general condition of the machine by casting his eye along the spindle tops and rolls. He can then judge the need for realignment or overhauling. The frequency of necessary realignment depends principally on the stability of the building, which varies tremendously from plant to plant.

Keep Check on Costs

The overseer without a standards department has to watch his costs carefully. The largest item is operator's wages; but unfortunately the overseer doesn't have enough time to give the question of wages enough attention. However, there are several things he can do to keep cost to a minimum:

1. Put as many operators as possible on piece work.
2. Find an efficient training system and keep a high proportion of full-load operators to part-load operators.
3. Reduce the natural wastage of training by keeping the average working life of operators high.

The overseer must find some method of keeping track of the rela-

CONTINUED ON PAGE 206

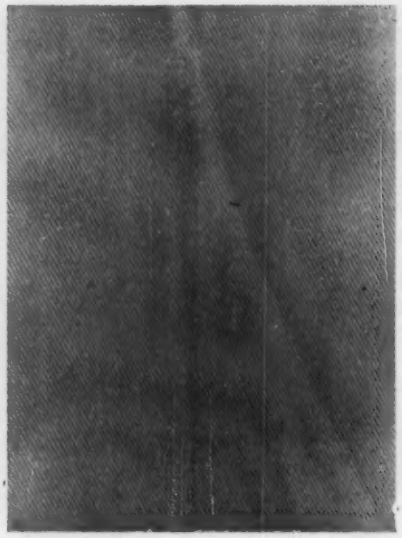
Humanics — **A TW Brief**

Good Human Relations Makes Supervisor's Job Easier

The worst human-relations problems develop under the supervisor who is least able to handle the situation. When human relations are bad, workers are forced to cover up their feelings because they know their feelings will not be respected; they become afraid to say what they mean. If workers cover up, the supervisor has a bigger problem in trying to understand their behavior. Words begin to have less meaning; and such things as expression, tone of voice, gesture, posture, etc. have more meaning.

It takes skill to be able to see the emotions behind words. But if a supervisor can improve his skill only a little by becoming more sensitive to the feelings of other people, the benefits are multiplied in preventing problems as well as handling them. Good human relations makes the supervisor's job easier; bad human relations makes his job more difficult.

DRAWBACKS caused by an extra warp end are one of the most common and serious types.



COTTON BALLS mat between the banks of drop wires and cause continuous drawbacks if they aren't removed.

TANGLED LINT between the drop wires and heddles caused the warp ends to tangle and make this defect.

Proper Yarn Preparation Prevents

► If weavers constantly inspect warps before the ends reach the drop wires of the loom, many warp tangles are elminated. But properly prepared warps are necessary to keep weavers from becoming hopelessly bogged down in removing yarn defects.

By WILMER C. WESTBROOK, Consulting Editor, TEXTILE WORLD

TANGLED ENDS are caused by objects interfering with the correct interweaving of yarn at the loom. The object that causes the tangle can come from the cotton or from any process in manufacturing the yarn, but the trouble shows up at the loom.

Sometimes a tangle will damage the cloth only slightly, but usually a minor or major defect is made. The defect is frequently so serious that the cloth must be cut. Cutting the cloth results in a loss of the cloth containing the cut-out defect, and usually several yards of shorts or remnants are left on one or both ends of the roll of cloth.

Tangles can be classified in these four groups: (1) drawbacks, (2) warp tangles, (3) harness tangles, and (4) shed tangles. To help control these defects, cloth-room graders should be able to specify the type of tangle when they send reports back to the weave room. Most tangles, however, are not a chronic defect and are usually eliminated by the time the cloth is inspected.

Bad Warps Cause Drawbacks

A drawback is caused by the yarn becoming tangled on the warp yarn beam or by the warp ends becoming tangled as they pass through the drop wires. A tangle on the yarn beam is often caused in slashing and is made because the yarn is not leased properly. The warp ends often pile up and roll up near the beam heads; and when they're released during weaving, the ends are twisted or tangled and will not separate when they reach the drop wires.

Another type of drawback is caused by excessive shedding of loose fibers and starch as the yarn passes through the drop wires. This sized lint forms in rolls between the drop wires and stops the warp ends from weaving through. Cloth woven under this condition contains streaks where the ends were held too tight; rippled effects result when the ends break loose and the slack is woven in.

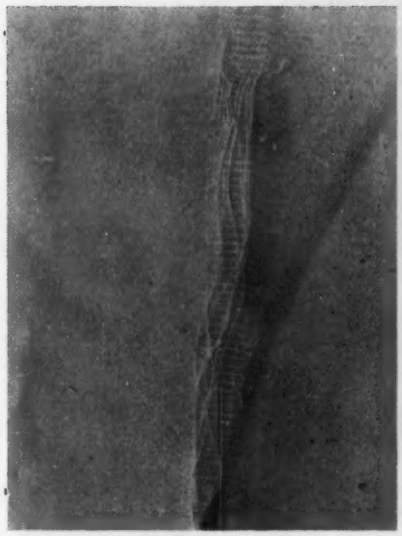
Some drawbacks are caused by excessive size and slasher-roll marks. The size sticks to the warp ends in flakes and is often hard to remove. The ends of a heavily sized warp not dried sufficiently before being wound on the loom beam stick together and cause drawbacks.

Large slubs or other defects in the yarn pick up size, and the defect sticks in the drop wire to cause drawbacks. Electric warp stop motions usually stop the loom at the beginning of a drawback of this type before a defect appears in the cloth. But mechanical stop motions usually do not stop the loom until a warp end breaks or becomes so slack that a drop wire falls.

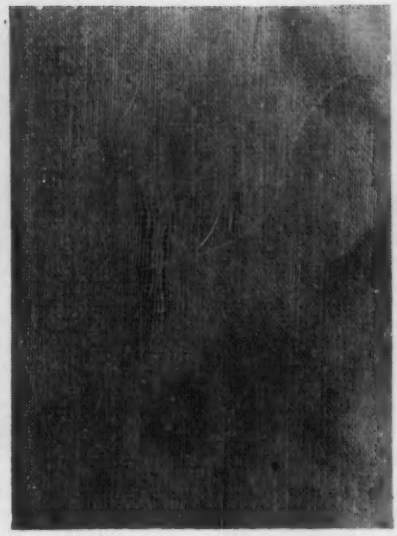
Warp Tangles Have Five Causes

Warp tangles are the most common type of tangle and occur between the banks of drop wires and the heddles. They consist of or can be caused by:

1. An extra end threaded through the drop wire and tangled with adjacent warp ends. If the extra end is not found and removed, the tangle eventually breaks some of the warp ends or causes them to become so



HARNESS TANGLES can be made several ways, but wild yarn in the heddles made this bad place.



SHED TANGLES are often caused by accumulations of lint on the harness frames and handrails.

TANGLED WARPS

slack that they fall and stop the loom. The warp stop motion sometimes fails to operate when a warp end breaks; and the loom continues to run, letting the loose end tangle with more and more ends. This tangle often breaks several warp ends and makes a major defect in the cloth before it is discovered.

The extra warp end can originate at the warpers, the slashers, or during the drawing in or tying of the pattern.

2. Wild yarn thrown, blown or dropped on the warp. This wild yarn is sometimes on the section beams and gets on the warp in slashing. Most of these tangles cannot get through the slasher comb, but the ones that do get through cause great damage in weaving because the hardened size makes them stick closely to the yarn.

Another source of wild yarn is filling yarn inadvertently or carelessly tossed on the warp by batteryhands.

3. Lint or raw cotton that falls into the warp and becomes matted between two or more warp ends. This material usually comes from overhead cleaners or from accumulations of lint that have settled on the ceiling or loom arches.

4. Foreign matter consisting of pieces of harness strapping, broom, straws, splinters, etc.

5. Balls of cotton caused by lack of size in the warp. The fibers separate and form tangles in the yarn as the warp ends weave through the shed. This condition is worsened by excessive relative humidity.

What Makes Shed Tangles?

Harness or heddle tangles are caused by broken harness strapping, broken or loose heddles, cotton or yarn dropped between the heddles, splinters, and other objects. Imperfections such as slubs and gouts break a warp end, and this end tangles with others.

Shed tangles occur in the warp shed between the harnesses and the reed. This type of tangle is caused by any object that interferes with the correct interlacing of one or more warp ends. Wild yarn, extra ends, pieces of harness strapping lint, straws, and splinters cause the tangles.

Another source of shed tangles is loose lint shed from the warp and stuck to the harness frames and handrail. If this lint is not cleaned off at least once a day, it drops off in balls or ropy pieces and tangles the warp ends. Heavy humidness makes this condition much worse because the loose lint readily picks up the moisture; then the starch in the size sticks tenaciously to the harness-frame and handrail surfaces.

Other common causes of shed tangles are bugs, crumbs from lunches, flakes of paint, bits of insulation, and other small objects that fall into the warp shed. Slubs or knots sometimes fail to pass through the reed; and when the end containing the defect breaks, it is jerked across several other ends and tangles result. This type of tangle usually causes considerable damage to the cloth, to

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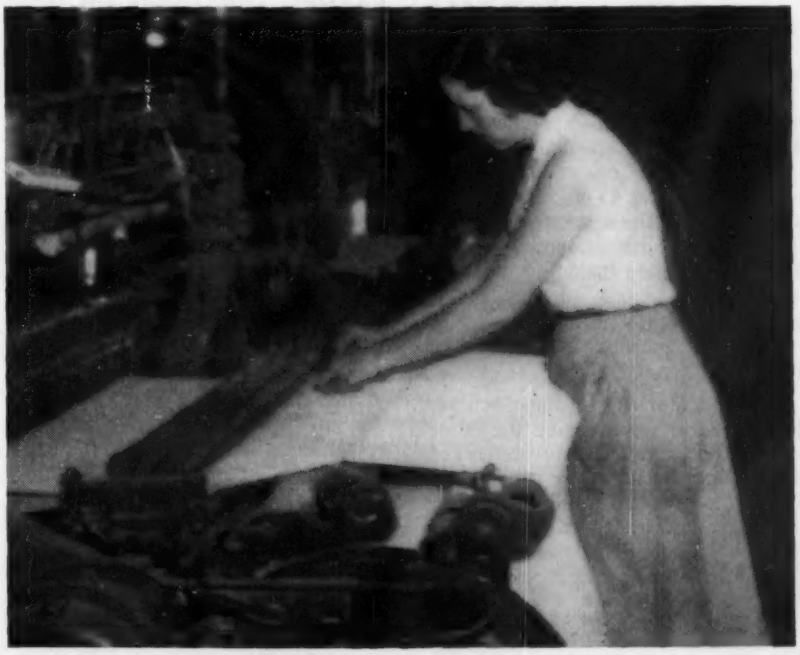
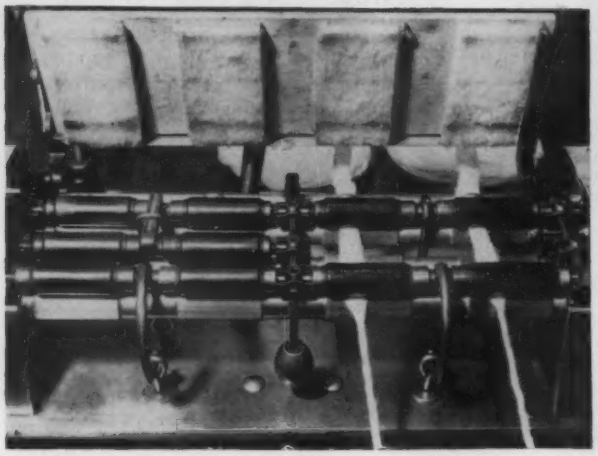


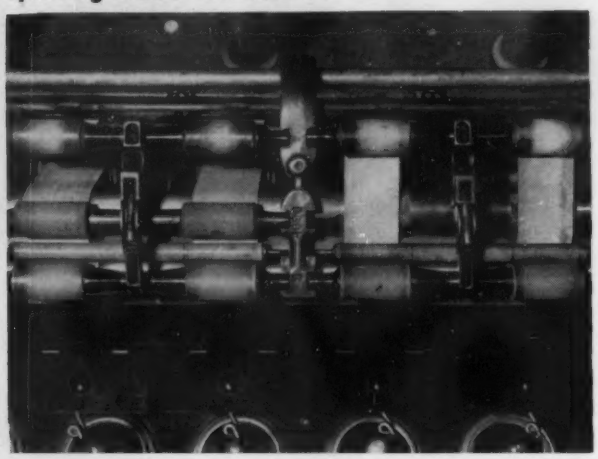
WARP TANGLES are prevented if the weaver is constantly on the lookout for warp defects.

Slubber Conversion



TOP MIDDLE ROLL is removed (right) to run long-staple rayon. A setting of 3⅜ ins. can then be made on this Whitin frame. Total draft and fiber control are reduced, and two processes of two-roll conventional slubbers are required to spin 0.90s yarn.

Spinning-Frame Conversion



LONGER APRON is used (right) on this Saco-Lowell long-draft frame for spinning finer rayon tufted-carpet yarn. The apron, which is directed over the middle bottom roll and around the rear bottom roll, is driven by the bite of the rear rolls.

How To Spin RAYON-CARPET Yarn

Highlights on how to spin coarse rayon-carpet fiber on the cotton system:

- **Opening and picking—Need little opening; use Kirschner beaters**
- **Carding—Use flat-top cards with conventional settings**
- **Drawing—Remove third top roll to get wide settings**
- **Fly frames—To spin 0.90s, use two processes with center top roll removed**
- **Spinning—With apron frames, remove middle top roll and use longer apron**

By ROBERT L. BARNES, Textile Research Dept., American Viscose Corp.*

TWO YEARS AGO, spinning coarse 3-in. fibers on conventional cotton equipment was considered impractical. Today, cotton mills are making tufted-carpet yarn from coarse rayon staple at the rate of over 45-million pounds a year. Here are the necessary modifications, settings, speeds, and yarn and fiber requirements for doing it:

Yarn and Fiber

Yarn

The gauge of the tufting machines determines to some degree the range of yarn numbers that are used. For ⅛-in.-gauge machines, yarns of from 0.85s to 1s resultant number are used; and on 5/32-in.-gauge machines, yarns of 1s to 1.5s resultant yarn are used. The most popular carpet yarns now being used range from 0.90s to 2.5/3.

Yarn evenness is not a critical factor in the final appearance of a carpet, but it is important to tufting-machine efficiency. Heavy slubs usually break at the needle eye; on a 1,000-needle machine, slubs can wreck tufting efficiency. Singles yarns have a more-critical evenness requirement than plied yarns.

Singles-yarn piecings must be made with latex-glue splices because large knots will break at the needle eye. In a 2.5/3 yarn, the singles yarn can be knotted before plying but the plied yarn must be glued.

Fiber Denier

Eight- and 15.0-den. fiber are used almost exclusively for rayon yarns spun on the cotton system. The coarseness of these fibers gives the stiffness and resiliency desirable in deep-pile carpets. Laboratory tests and floor tests show the crush properties of the two fibers to be almost the same. Personal preference seems to be the deciding factor as to which fiber is more desirable for carpets. Many mills are spinning 50-50 blends of the two fibers.

Fiber Length

Fifteen-denier fiber is used only in 3-in. lengths. The high diameter-to-length ratio of fibers shorter than 2½ or 3 ins. makes it impractical to spin on cotton equipment. The practical limit of 8.0-den. fiber starts with a 1½-in. length; so 8.0-den. fiber is used only in 1⅞- and 3-in. lengths.

Fiber Luster

Again, personal preference decides whether dull- or bright-luster fiber is

CONTINUED ON PAGE 238

* *Since this article was written, Mr. Barnes has joined Charm Tread Mills, Monticello, Ark.*

CONVEYOR SYSTEM is made up of an 85-ft. length of roller track, joined at one point by a supplementary track, and an Acme automatic strapper (extreme right) that can apply three straps simultaneously.

CLOTH-PACKING SYSTEM
Cuts Packing Costs 40%

▶ An 85-ft. length of roller track and an automatic strapper at Eagle & Phenix Div., Fairforest Co., have cut packing labor costs 40 to 50%. In 8 hrs. the packing room can turn out 600 ready-to-ship cartons.

By **MICHAEL LONDON,** Assistant Editor, TEXTILE WORLD

A SIMPLE CONVEYOR ARRANGEMENT in the cloth-packing room at the Eagle & Phenix Div. of Fairforest Co., Columbus, Ga., has saved the department 40 to 50% in labor costs.

Before the present system was installed, cloth used to be taken from trucks and put into cartons and the cartons strapped on the floor. It was then necessary to truck the cartons to the storing area.

Today, two checkers transfer the cloth from the trucks to the cartons placed on a roller track. As the cartons move down the track, one man places lids on them, another stencils on the necessary information, and an Acme automatic strapper, capable of applying three straps simultaneously, secures the cartons. It takes less than 5 mins. for an empty carton to be filled, strapped, and stored.

At the beginning of the line, one of the two checkers transferring the cloth from trucks to the cartons calls out the identification of the fabric. Two girls, also on the checking line, add the yardage packed on an adding machine and record the fabric identification.

When fabrics with patterns are packed, a checker cuts a swatch from each carton, and the swatch stays with the carton until it reaches the end of the track, where it is removed and filed. In case of a customer complaint, the swatch is checked to verify the mistake and to determine the responsible individual.

A 10-ft. length of track from the stenciling operation to the automatic strapper is belt-driven. The entire roller track is 85 ft. long, with a supplementary track joining the main line at the stenciling operation. One man is required to operate the automatic strapper, which also applies sufficient pressure to the top of the carton to keep the straps from coming loose when cartons are stacked on each other.

The packing room runs one shift and employs 11 people. They can pack as many as 600 cartons a day, each carton weighing from 300 to 500 lbs.

NYLON-YARN THROWING PLANT has 30,000 sq. ft. of floor space in a climate that runs from hot to cold. The mill is air conditioned and uses only electric heat.

No Smokestack— ELECTRIC HEATING Is Used

- **Initial heating-equipment costs were about $10,000 less than proposed steam-heating equipment**
- **Operating costs of electric heating are less than steam heating**
- **Power costs are $500 per month less in winter than in summer**
- **Heating and air conditioning work together automatically**

By R. S. FULLERTON, Carrier Corp.

THE DUFFY SILK CO. at Murphy, N. C., is one of the first textile plants to be built without a smokestack. All of the heat in the plant is supplied by electric heaters; in all production areas, the heaters are built into the air-conditioning ducts.

Temperature from 0 to 95° F.

The climate at Murphy, located in the heart of the North Carolina mountains, is severe. For example, winter temperatures drop below 0° F. about 15 days each year. On the other hand, summer temperatures reach an occasional high of 95° F.

Winter temperatures range below 30° F. for three months. The average summer daytime temperature is between 85° F. and 90° F.

On a summer day of 85° F. when the air-conditioning system is running full blast to hold yarn-processing areas to 80° F., the night temperature often drops so low that the heaters are called on to raise the temperature. The air-conditioning and heating systems are so closely integrated that they work together under this wide range of weather conditions with practically no maintenance other than air-washer cleaning.

The total power costs during January, the coldest month, are $500 less than they are during August when the air-conditioning system is run at peak capacity. Power costs are less than 1¢ per kwh. when the air-conditioning compressor is running at full capacity, and power consumption is 500,000 kwh. per month.

The Duffy plant was originally designed to be heated by steam generated in oil-fired boilers. Since air conditioning was so important in the throwing operations in Duffy's Buffalo, N. Y., plant, the company considered air conditioning an important feature in planning and constructing the Murphy building.

Why Electric Heating Is Used

A conference of architects, engineers, and representatives of the local power company was held to work out electrical-wiring requirements for the plant. Due to the power required for air conditioning, unusually low power rates were predicted and the total power costs for the plant were estimated on these rates.

The result of this forecast was so interesting that the air-conditioning engineers recommended that a study be made of utilizing electric power for heating the building during the winter. Practically all work on the project was stopped while the study was made by the architects, Biberstein, Bowles & Beacham, Inc., and air-conditioning engineers of Carrier Corp.

The analysis showed that the first cost of electric-heating equipment was about $10,000 less than the steam-generating equipment and that the predicted average operating cost of electric heating was slightly less than the cost of

ONE REFRIGERATION MACHINE, the centrifugal-compressor type, serves three central-station units located near the various processes to give flexibility.

PNEUMATIC ELECTRIC RELAYS and magnetic contactors in sequence control the operation of the electric air heaters in the twister room.

generating steam. So all the architectural and mechanical-equipment plans were revised to omit a boiler room, smoke-stack, steam piping, steam coils, and steam-operated water heaters. The revised plans called for the full use of electric power for all the heating requirements of the plant, including a few areas not air conditioned, such as switchgear room, toilets, etc.

The Murphy plant covers approximately 30,000 sq. ft. of floor space and is divided into twisting, sizing, redrawing, coning, receiving, and shipping departments. The building construction details are relatively conventional. Brick is used for exterior walls, steel columns and girder framing are used, and an insulated wood roof decking is covered with a tar-and-gravel surface. The building has no windows.

Air Conditioning Is Flexible

The air-conditioning equipment consists of three central-station spray dehumidifier systems and a small self-contained air-conditioning unit to serve the general-office area. However, in some areas the requirements were such that the systems needed to develop and hold constant any level of room relative humidity within a range established by the mill.

One central-station unit is located in the twisting department and utilizes air-operated, gravity-type atomizer nozzles at air-distributing outlets in the duct work. This system provides the desired flexibility.

Another central-station unit of the same kind is located in the coning department and also serves the shipping and receiving area.

An independent system is located in the size room because of the requirements for accurate control of both dry-bulb temperature and relative humidity.

SPACE REQUIREMENTS BY DEPARTMENTS

Department	Minimum temperature	Minimum relative humidity	Maximum temperature	Maximum relative humidity
Twister	80° (F.)	50 (%)	80° (F.)	70(%)
Size	80°	50	80°	50
Redraw	80°	50	80°	70
Coning	80°	60	80°	70
Shipping	80°	60	80°	70

Standard heating equipment is used to heat the air in the ducts, but the automatic controls were developed especially for the Murphy Mill. The controls are a fairly simple arrangement of standard electric contactors to control multiple electrical circuits in each duct heater. These contactors are wired so that the individual duct heater circuits are energized in parallel circuits or in series circuits. A minimum of unbalancing occurs in the three-phase power supply to the duct heaters.

In turn, these contactors are piloted by standard pneumatic electric switches actuated by a pneumatic thermostat located within the conditioned space. Since the pneumatic electric switches are operated in sequence from the varying branch-line pressure of the pneumatic thermostats, the contactors operated in the same sequence.

This form of control has produced excellent results in maintaining uniform temperatures in all departments of the plant. It is also simple to operate and maintain and is positive in action.

All the heaters are three-phase, 60-cycle, 460-v. Chromalox heaters. There are three 100-kw. heaters in the twisting room; one 40- and one 50-kw. unit are located in the coning room; one 50-kw. unit is in the size room; and two 40-kw. heaters are used in the redrawing room. Two small electric space heaters are mounted in the receiving and shipping area. Other unconditioned areas, such as the switchgear room, are also heated with space heaters.

Electric Power All the Way

The water in the spray dehumidifiers is also heated electrically but by a different method. A large capacity of heated water is used, but it cannot be controlled with on-off controls.

Closed electric water heaters are located at the discharge side of the recirculating spray water pumps at each of the dehumidifiers and are applied much like the old side-arm heater. With this arrangement, the temperature rise of the water going through the heater is high; and when this water is blended with the water that bypasses the heater, the resulting mixture is at the desired temperature.

The fluctuations in the temperature of the water leaving the heater under on-off controls is leveled out, and the spray dehumidifier delivers air to the distribution system at a constant condition.

Hot water for mixing size and steaming yarn is heated in a water heater, a 160-amp. 10-hp. steam generator, and a 200-amp. 18-hp. steam generator.

CHANGED-OVER FRAME (left) has Whitin Superdraft cradles and SKF antifriction spindles. Overseer B. B. Yarborough checks ends down on the work sheet of Virginia Broadwell, checker, (center) as Spinner Myrtle Bowman puts up an end.

THE BIG BOBBIN of 30s yarn that Frank Hunsucker, Jr., assistant treasurer, (left) is discussing with Bill Mallard, assistant superintendent, has a 10-in. traverse and a net weight of about 7½ oz. on the paper tube. These tubes are replacing the wooden bobbins with 7- and 8-in. traverses shown on the desk.

SPINNING CHANGES
Pay Off at Highland

- **As a result of extensive tests, Highland Cotton Mills, High Point, N. C., is modernizing the spinning room in its carded-yarn mill. Improvments include—**
  - **Whitin Superdraft system with 5-mm. cradles**
  - **Parks-Cramer air-change system**
  - **Central-station Pneumafil with individual waste-collector units**
  - **SKF spindles for paper tubes with 10-in. traverses**

By W. A. THOMASON, JR., Textile Engineer

CHANGES now being made at Highland Cotton Mills will net these results:

1. One-process roving will replace the old two-process.
2. Larger rings and longer traverses will about double the amount of yarn on bobbins.
3. Winding costs will be cut nearly in half.

The mill has 16 4-in.-gauge spinning frames and 48 3¾-in.-gauge frames. Yarn numbers range from 7s to 30s single and plied mercerized knitting yarns spun from double-creeled roving.

Here's the Old Setup . . .

Slubbers and speeders were used for roving. Spinning frames were equipped with plain-bearing spindles, 7- and 8-in. traverses, 2-in. rings for the finer numbers, and 2⅜-in. rings for the medium and coarser numbers. Yarn-package size ranged from 2.9 oz. for 30s to 4.1 oz. for 7s.

Roving numbers for the yarns were: 1.13 hk. for 10s and coarser, 1.85 hk. for 10s to 18s, 2.20 hk. for 18s to 24s, and 3.35 hk. for 24s to 30s.

. . . And the New

With the improvements now being made, Highland will throw out the old speeders and make roving for the spinning room on 9x4½ and 10x5 Whitin Interdraft slubbers. To accommodate these roving-bobbin sizes, creels are being split and pieced out by Highland's mill shop.

Spinning frames will have Whitin SKF antifriction spindles for tapered paper tubes and a 10-in. traverse. Rings will be changed so that the finer yarn numbers will be spun on 2⅜-in. rings (instead of 2-in.), medium numbers on 2½-in. rings (instead of 2⅜-in.), and coarser numbers on 2⅝-in. rings (instead of 2¾ in.). Bobbins will weigh 7 to 8 oz.

All tests have indicated that front-roll speeds (131 rpm. for 30s to 177 for 10s) can be maintained, possibly increased.

Drafts will be increased substantially. For 10s and coarser, 0.90-hk. roving will be used; for 10s and 18s, 1.20-hk. will be used, and for 20s to 30s, 2.00-hk. will be used.

Other Improvements Made

A Parks-Cramer air-change system has been installed, with provision made to add refrigeration later. Parks-Cramer overhead cleaners are also used.

A central-station Pneumafil system is being installed. Each frame will have the conventional waste-collector unit and a fan to furnish suction from the orifices to the collector unit. The exhaust air from the Pneumafil systems of each group of 16 frames will be pulled by a fan to a central point. During hot weather, this exhaust air will be turned outside; in winter, it will be returned to the room.

The new 5-mm. cradles, 54 mm. wide, control the fibers better than the old cradles; and as a result, yarns are stronger and more even.

The air-change system makes closer control of humidity possible and gives better spinning conditions. Fewer ends down and better yarns are expected by Highland. Normally, ends down might be a little higher with the 10-in. traverse than with the shorter traverses, but better fiber control and humidity control are expected to counteract this tendency.

Since package sizes are double or better, winding cost will be reduced about one-half.

How Alamac Creates Versatile KNIT FABRICS

POSTER COLORS are used to paint designs on 20-squares-to-the-inch paper to simulate the finished fabric.

▶ **Sample knitted-fabric designs are made at Alamac Knitting Mills by drawing them on small-squared paper and painting them to simulate the appearance of the finished fabric. By breaking the job into tasks and having specialists to perform these tasks, Alamac gets versatile patterns quickly.**

By JAMES H. BLORE
Associate Editor, TEXTILE WORLD

PATTERN WHEELS are filled with jacks according to the pattern-wheel draft made out by the designer.

KNITTED-FABRIC DESIGN at Alamac Knitting Mills, Inc., Indian Orchard, Mass., is a specialized job that requires several operations. By having specialists to do these jobs, more versatile patterns are made in a shorter time than by having one person do all the work.

The well-lit design room is situated near the main office. This room also stores the finished cloth samples.

Designer Knows Machine Scope

The designing is done on a large table by a specially trained designer who is conversant with the technicalities of all knitting machines. The designer first marks out the pattern area on a piece of paper that is marked off 20 squares to the inch. This paper is used because the finished fabric has about 20 stitches to the inch.

A rough design is sketched in this area, and poster colors are used to paint in the design to give some idea of the finished appearance of the fabric.

If the design is suitable, it is sent to the customer with various color combinations. When the design has been approved, the pattern is drafted out on paper with 10 squares to the inch. The pattern-wheel draft is made from this design.

There are 32 horizontal spaces marked on the pattern-wheel draft. These spaces are filled in by the designer according to the design.

Draft Shows Jack Positions

The number of spaces used depends upon the number of pattern feeds used in the design. The spaces have figures on two different levels. The top level determines the number of jacks that are to be placed in the pattern wheel, and the lower level denotes the spaces to be left between the jacks.

The pattern-wheel draft is then sent to the knitting room. A special room just off the knitting room is devoted to placing the jacks in the wheels according to the designer's specifications.

Pattern wheels are kept in steel boxes and sorted out according to the number of slots in the wheels. The slots are filled by girls who use tweezers to help speed the job.

The striper-drum specifications are enclosed in a transparent cover and sent to the knitting machines with the completed wheels. The specification sheet is hung on the yarn rack while the mechanic changes the pegs in the drums.

When the wheels have been installed on the machine and the design has been knitted to satisfaction, two small samples are cut from the fabric for future reference. One sample is clipped to the specification sheet, and the other sample is clipped to the pattern-wheel draft.

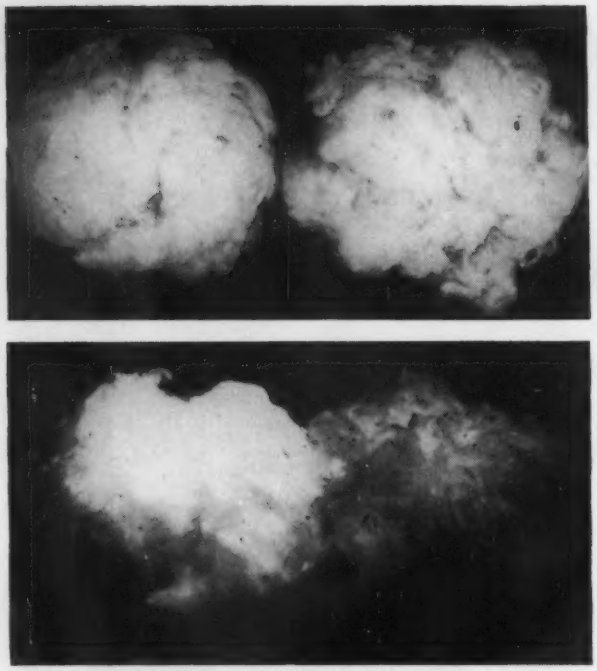
To Prevent Dye Streaks in Cloth—

Check RAW COTTON With Ultraviolet Light

▶Experiments at N. C. State have indicated that potential dye streaks can be forecast by checking raw cotton for differences in fluorescence under ultraviolet light. Dye acceptance and fluorescence were found to vary from crop to crop and area to area.

▶One mill has prevented dye streaks caused by different cottons by examining samples from every bale and discarding cotton that fluoresces brightly.

By K. S. CAMPBELL
School of Textiles, N. C. State College



OLD-CROP CALIFORNIA COTTON (left) is compared with new-crop California cotton (right) under ordinary and ultraviolet light. Although the samples seem similar under ordinary light (top), ultraviolet light brings out the difference.

ULTRAVIOLET examination has proved valuable in separating California cottons of different crops years with different dyeing characteristics; and this examination also may be valuable for separating cottons from other areas.

When the proportion of different cotton introduced into a blend is unknown, even the most careful blending technique cannot always produce a uniform product, since one batch may contain a much greater degree of cotton with anomalous dyeing properties than another. If the troublesome cotton can be identified, it can be separated and used for another purpose or can be introduced into the blend in a controlled manner.

Physically Uniform Yarn Caused Streaks

In experiments, loop- and cut-pile rugs, knit goods, and woven pieces made from these yarns, normally uniform according to all physical tests, after being dyed had light or dark dyed yarns that caused a streaky appearance. Since in each case all the raw cotton that went into the yarns was blended according to accepted modern techniques, dyeing was suspected as the cause of the trouble. However, when the pieces were stripped and redyed, the streaks recurred and coincided exactly with those in the original dyeing. Changes in dyes and dyeing techniques also failed to produce dyeings without streaks.

It therefore appeared that some uncontrolled factor must be entering into the blending operation or that some physical or chemical change was taking place in a portion of the yarn during processing. Very careful investigation, however, did not reveal any stage in the manufacture of the yarn where dyeing properties could have been affected.

To trace the source of the faulty yarn, a portion of an undyed rug was obtained where the pile yarns could be matched yarn for yarn with those of a dyed rug with a number of dye streaks. The undyed rug length contained yarns from many of the same cones that were used for the dyed portion, and the yarns occupied the same relative position in both sections.

Thus, available for the first time, were undyed yarns with known abnormal dyeing characteristics. Heretofore, the abnormal yarns could only be recognized after dyeing, and they caused expensive seconds in finished rugs.

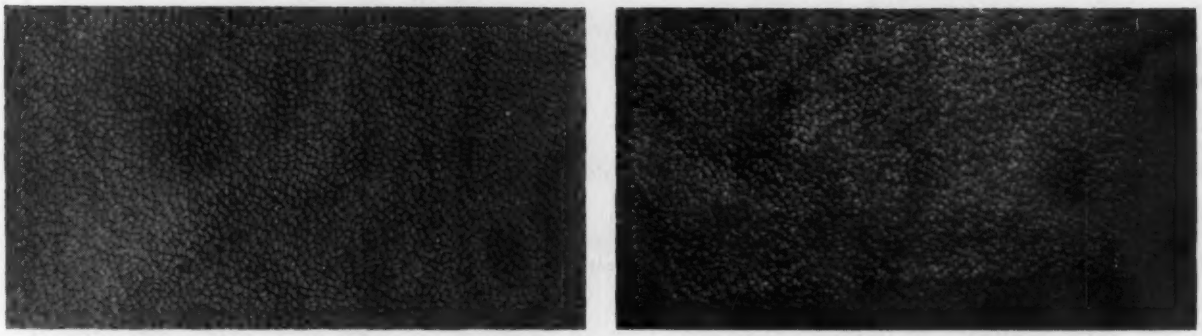
Experiments with the undyed rug sample produced interesting results. Variations in acetic-acid rinsing, scouring, and bleaching did not affect the dyeing properties of the yarn. Solvent extraction also had no effect; and variations in dyestuff combinations, dyeing assistants, temperature of dyeing, and time of dyeing had comparatively little influence on the contrast between normal and abnormal yarns in the sample.

Abnormal Yarns Had High Fluorescence

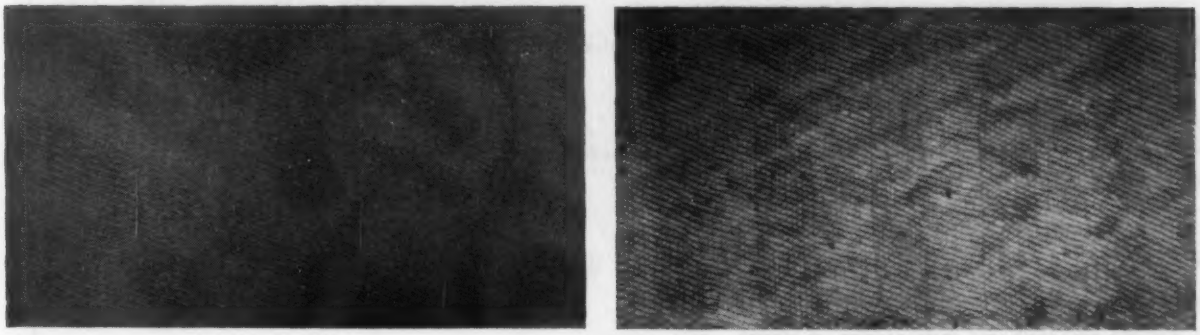
It was discovered, however, that certain undyed yarns emitted a strong white fluorescence when they were examined in the dark under ultraviolet light from a quartz mercury-vapor lamp. Dyeing tests later revealed that the highly fluorescent yarns accepted dye abnormally.

The yarns that fluoresced brightly were six-ply yarns, and some difference in degree of fluorescence existed among them. The ply was then separated into singles and examined again under ultraviolet light. Here some of the singles fluoresced while others did not. The varying ratio of fluorescing to nonfluorescing single yarns thus accounted for the differences in degree of fluorescence noted in the ply yarns.

At first it was believed that the fluorescence was probably a result of oil somehow accumulated in processing or, perhaps, a difference in character or concentration of natural oils and waxes. However, extraction of the yarn in organic solvents and in scouring and bleaching produced little change in fluorescence; and these possibilities were discounted.



RUG viewed under ordinary light (left) seems uniform, while the same rug under ultraviolet light exhibits streakiness.



TUBING was knitted from yarns containing old- and new-crop California cotton in alternating ½-in. bands. Viewed under ordinary light (left), the fabric appears uniform. Under ultraviolet light, however, the streaks are apparent.

Old-Crop Cotton Caused Variation

Samples of raw cotton taken directly from the bales making up the mix were then checked under ultraviolet light. A few bales consisted of cotton that produced a bright white fluorescence; and the cotton all through these bales was more or less uniform in this respect. This, it appeared, was the offending cotton. It was an old-crop California cotton usually indistinguishable by label from the new-crop California cotton that comprised the bulk of the mix, which fluoresced a dull blue.

Within the last 18 months, several North Carolina mills have eliminated fabric streaks by using this ultraviolet-light method to segregate cottons with different dyeing characteristics.

Sampling procedure, which is simple, consists of comparing a handful of cotton from a new bale with a handful of the standard variety. The comparison takes place in a dark room under an ultraviolet source. A Hanovia analytical-model quartz mercury-vapor lamp has proved satisfactory as the ultraviolet source.

By such examination, one mill has prevented any recurrence of this type of dyeing difficulty for almost a year. This mill, by examining samples from every bale, has been eliminating about 1 to 2% of all bales for rug-yarn use.

Dyers will recognize that differences in depth or shade that are only barely discernible in skeins may be easy to see against a background of normally dyed fabric. For this reason, laboratory dye tests on skeins containing suspected yarn sometimes fail to reveal yarns with slightly different dye affinities. These differences are brought out by ultraviolet examination.

Besides the greater simplicity of the ultraviolet-light method compared to test dyeing, the former is also valuable in sometimes revealing very minute differences in foreign-matter content or chemical nature. These differences, when extremely slight, are very difficult to detect by ordinary analytical methods. For example, fluorescence was used to detect used batting in bedding material and slight heat degradation of cotton caused by overdrying.

It should be made clear, however, that a difference in fluorescent properties in two cottons does not necessarily mean that they will dye differently. For example, there was a distinguishable though slight difference in fluorescence among six samples of Carolina cotton that showed no appreciable difference in dye acceptance. It is believed probable, however, that a more pronounced variation in fluorescence would have resulted in dyeing differences.

Dye Streaks Do Not Guarantee Fluorescence Difference

Since factors may be involved that can affect dyeing without materially affecting fluorescence, it cannot be assumed that because fibers dye differently, they will necessarily fluoresce differently.

Although quite distinct, the fluorescence difference between Memphis Territory and new-crop California cotton was considerably less than between new- and old-crop California, or between Memphis and old-crop California; yet the dyeing difference between Memphis and new-crop California was sufficient to cause streaks in spite of the slighter fluorescence differential.

Fluorescence may be defined as the emission of radiation of longer wave length (visible light) by a substance exposed to radiation of shorter wave length (invisible ultraviolet). In other words, the nature of the substance transforms invisible ultraviolet radiation into visible light—most often blue, bluish-white, or white in color.

There is sound theoretical explanation for the phenomenon of fluorescence, but it is far from clear why cotton that fluoresces differently should dye differently. From the evidence, it appears possible that a superficial degradation of the cotton is the connecting link between fluorescence and dyestuff affinity.

ERWIN MILLS, INC. MILL NO. 3 LOOMFIXERS' CHECKING SYSTEM

Shift 2nd
Section No. 3

Report for week ending.....

The following items are to be checked daily on the entire job:

A. Check boxing of shuttles
B. Check transferrer by changing bobbin to see that bobbin rings up correctly in shuttle
C. Check thread cutter to see that filling knife holds and cuts thread correctly and temples are properly set
D. Check bobbins in quill can to see that filling feeder is transferring correctly
E. Check warp tension
F. Make needed replacements and repairs

Items to be checked Monday and Thursday on one-third of job:

A. Check shuttles and polish with shuttle dressing
B. Check pickers, picker sticks, checkstraps, lug straps and connections, and parallel motions
C. Make needed repairs and adjustments

Items to be checked on Tuesday on one-third of job:

A. Check leathers on box fronts, box binders, box back, and lay end
B. Replace worn leathers and make needed adjustments

Items to be checked Wednesday:

Dobby looms on one-third of job:

A. Check harnesses, harness cords, harness springs, harness wires, sheaves, and jack eyes
B. Check dobby motion
C. Replace worn parts and make needed adjustments

Cam looms on one-third of job:

A. Check setting of harnesses and timing of loom
B. Check condition of harnesses and strapping
C. Make needed repairs and adjustments

Items to be checked Friday on one-third of job:

A. Check motor gears
B. Check clutch friction
C. Check brakes
D. Replace worn parts and make the needed adjustments

Looms checked by loomfixer.....(use black pencil)
Looms checked by assistant overseer.....(use red pencil)
Looms checked by overseer.....(use green pencil)

	Loom Numbers				
	Mon.	Tues	Wed.	Thurs.	Fri.
	✓187	187	187	187	187
	✓188	188	188	188	188
	✓189	189	189	189	189
	✓190	190	190	190	190
	✓191	191	191	191	191
	✓192	192	192	192	192
	✓193	193	193	193	193
	✓194	194	194	194	194
	✓195	195	195	195	195
	✓196	196	196	196	196
	✓197	197	197	197	197
	✓198	198	198	198	198
	✓199	199	199	199	199
	✓200	200	200	200	200
	✓201	201	201	201	201
	✓202	202	202	202	202
	✓203	203	203	203	203
	✓204	204	204	204	204
	✓205	205	205	205	205
	✓206	206	206	206	206
	✓207	207	207	207	207
	✓208	208	208	208	208
	✓209	209	209	209	209
	✓210	210	210	210	210
Checked by assistant overseer	✓211	211	211	211	211
	R.C.P.	___	___	___	___
Checked by overseer	H.G.	___	___	___	___

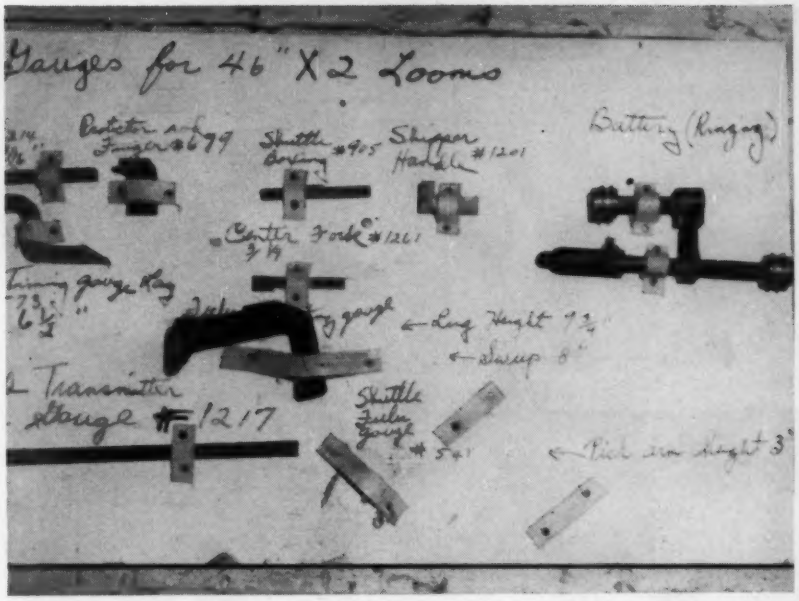
Remarks:

LOOMFIXER'S CHECKLIST covers many loom motions needing constant attention to make first-quality cloth. The loomfixer marks the numbers of the looms checked and turns the report in to the assistant overseer. The assistant overseer makes checks at random and takes the report to the weave-room office at the end of the shift. The general overseer spot-checks the looms. Then the report is filed in the office.

This LOOM-CHECKING System Gives High-Quality Cloth

► The weave-room men at Cooleemee Mills forgot production cares for awhile and developed a loom-checking and quality-control system. Now they're getting both high efficiency and quality.

By **RICHARD B. PRESSLEY,** Associate Editor, TEXTILE WORLD



DRAPER GAUGES are used for setting the looms. Since the different types of looms at Cooleemee require different gauges, sample gauges for each type of loom are posted and identified at each group of looms.

Date 10-4-54
Fixer's Name J. H. D.

Loom number 867 was observed today, and the items checked below were found wrong with it. Please make notation under remarks what you have done and turn in to me.

Tape selvage	Reset
Harness setting	OK
Bad reed	OK
Temples	OK
Thread cutters	Reset
Shuttle feeler	OK
Filling feeler	OK
Shuttle boxing poorly	Reboxed
Bad shuttle	OK
Pickers	Replace one
Parallel	OK
Picking motion	Bad
Rockershaft and lay swords	OK
Protector rods	OK
Frogs and brake	OK
Take-up motion	OK
Filling motion	OK
Battery	OK
Cloth wind up	Too Tight
Crankshaft assembly	OK
Shipper motion	OK
Camshaft assembly	OK
Let-off motion	OK
Stop motion	OK
Loom speed slow	OK
Oiling and greasing	OK
Loose parts on floor	None

Remarks New left-hand picking shaft was put in loom

Inspected by J. C. A.

ASSISTANT OVERSEER'S CHECKLIST shows the important loom checking he does each day. All work listed is routine, but the checklist gives a record and helps stop seconds.

TO GET THE MOST out of the modern equipment in the weave room, supervisors of Erwin Mills, Inc., Mill No. 3 at Cooleemee, N. C., have developed methods that result in high-quality cloth with production a secondary requirement.

They Think About Quality

Quality consciousness begins with the top supervisor in each department and is stressed daily to each employee.

An important quality-control meeting is held at 11 o'clock each morning. The meeting is attended by the manager, superintendent, all overseers of departments, and any assistant overseer needed. The supervisors look at all bad cloth (usually about 15 rolls each day from 994 looms). Then the cloth is sent back to the department responsible for the major defects.

For example, filling slugs are shown to carding and spinning employees; slasher stains go to the slasher tenders; and weave-room seconds are sent back to the weave room, where the assistant overseers show them to loomfixers and weavers. This method fixes the responsibility where it belongs and relieves weave-room employees of an unfair division of seconds.

The bulk of seconds are made in weaving, and an efficient system has been formed to hold seconds to a minimum.

The weave-room organization is headed by a general overseer of weaving who also has charge of slashing, drawing in, and tying in. There's an assistant foreman of slashing on each shift and two assistant overseers of weaving on each shift.

Loom-Check Forms Are Used

Looms making seconds are thoroughly checked by assistant overseers, but their checking time is spent largely on the general physical condition of looms so that seconds will not be made.

The assistant overseers check looms by itemized forms; and from these forms, a daily form is made out to show what checking has been done. This form gives the loom numbers of new shuttles checked in the looms, cloth rolled back at the cloth roll and inspected, looms inspected at warp-outs, new-drawn warps checked, and looms checked for seconds repeats.

These itemized forms are spot-checked by the overseer of weaving.

A special form is issued to all loomfixers each Monday morning to be used to check their looms for the week. Each loomfixer checks a third of the looms on his section. In that way, the most important loom motions are given a complete check every week.

Another loomfixer's checklist is used to check looms at warp-outs to insure starting every new warp right. At this time, loom gauges are used to reset the loom motions not easily reached when warps are in the looms. The assistant overseers spot-check new warps with the checklist after the loomfixers finish.

The same checklist is used to check looms making repeats of second-quality cloth.

Everyone Checks Constantly

Looms with new shuttles are carefully checked by loomfixers, assistant overseers, and the overseer. The loom numbers and date of installation are placed on a bulletin board at each assistant overseer's job so that the looms can be watched until all danger of broken shuttles, worn shuttles, and second-quality cloth is past.

Every week, assistant overseers check one loom motion and loomfixers fix the defective motions found. The motion to be checked each week

is selected by the overseer of weaving. He bases the check on his examination of second-quality cloth and his spot-check of looms. The name of the motion to be checked each week is painted on a card and fastened to the inside of the weave-room office door with thumbtacks so that assistant overseers constantly keep the check in mind.

Weavers inspect the cloth on all their looms once each shift with an electric drop cord and light. Defects, such as kinky filling caused by center-fork stop motions, can't be seen with the naked eye on heavy twills; but they show up readily under the light.

A weekly report of each weaver's and loomfixer's seconds and production record is posted on bulletin boards in the weave room.

How Special Motions Are Fixed

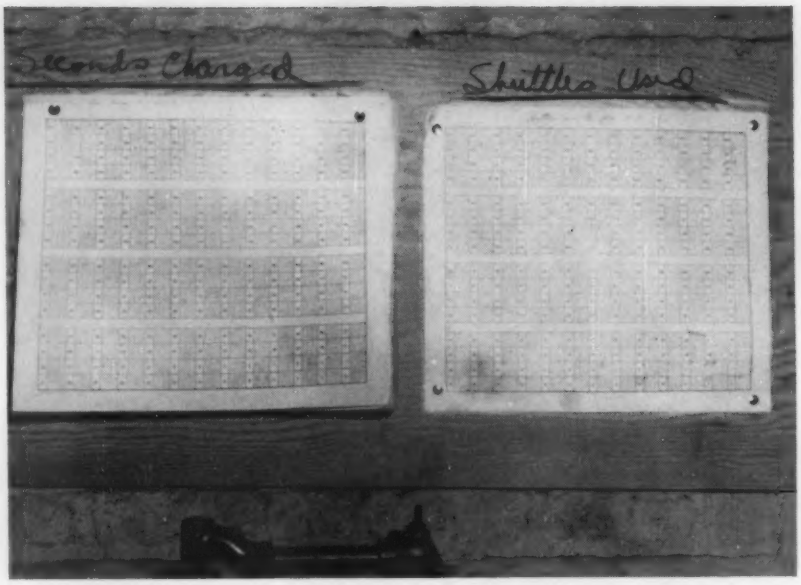
So that loomfixers can give their full attention to fixing and checking looms, special loom motions are repaired and kept set by a breakdown man trained for the job.

Draper-Diehl drives on 323 of the looms aren't serviced by the loomfixers. The breakdown man checks the drives every six months. At that time, he turns the transmitter gear and uses a feeler gauge to set the clutch gap and clutch pressure.

A maintenance-department electrician greases the motor every six months, and weave-room oilers grease the transmitter gear twice each week.

Other special jobs in weaving that relieve loomfixers of normal work are the rebuilding of harness cams and dobbies by a breakdown man. Harness cams removed from the loom for style changes are cleaned; then they're rebuilt by the breakdown man when they're needed for other weaves and sent to the loomfixer ready to be set in the loom.

Dobbies are also completely rebuilt in a jig in the repair room. Then when dobby trouble occurs in the weave room, the complete dobby is removed with a special truck equipped with a hoist. A rebuilt dobby is put on the loom to replace the defective one.



A BULLETIN BOARD is used to show second-quality cloth charged to each weaver and loomfixer each week. Loom numbers of new shuttles are also posted so that everyone concerned keeps alert to their condition.

Assistant Overseer Daily Check

Name:

New shuttles - Loom numbers

884 768 ....
964 ....

Cloth rolled down and inspected

890 891 892 893
894 895 896 897

Looms inspected at warp-out

765 864 749 950
742 936 852 901

New warps checked

765 804 702 .....
742 936 737 .....

Repeat seconds loom

689 812 ....
759 ....

Notes

Loom 884 scarring new shuttle. Realigned reed and box plates.

NEW-WARP CHECKLIST is also used to check looms making seconds repeats. The assistant overseer checks the loom and identifies the loom parts needing correction. Loomfixers make the corrections.

Humanics — A TW Brief

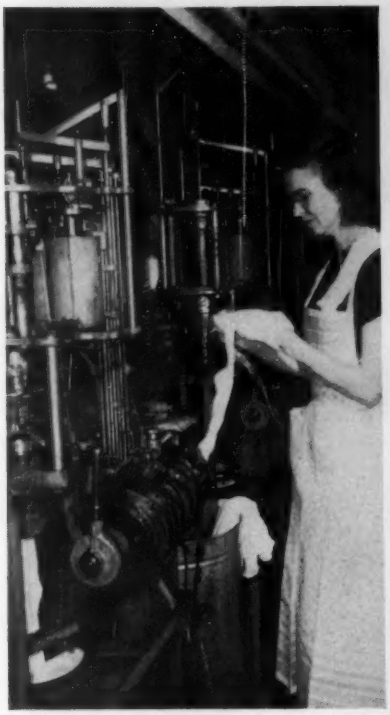
What To Do About Rumors

An age-old problem with any group of people is the rumor. One trouble is that people like rumors; and some people prefer rumors to the truth. But a rumor in itself doesn't do harm. A rumor does harm in so far as it creates uncertainty. Uncertainty produces fear and confusion.

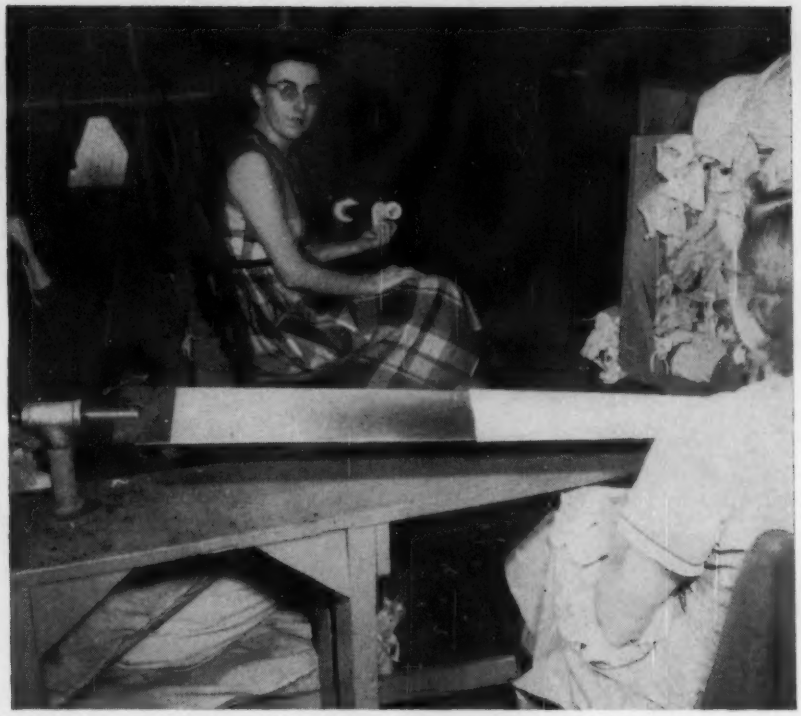
In one case, a mill was testing a new machine. To explain its presence, a story on the machine was printed in the company publication. Two days later, however, a rumor was all over the plant that all existing machines in the department were going to be replaced with new machines. This rumor was answered in the next issue of the publication. Soon, a new rumor was going the rounds, and this rumor was answered.

In a situation like this one, the management could expect rumors to continue until it had finished testing the machine and decided what to do about it. But in the meantime, every supervisor was alert for rumors.

A supervisor who makes a practice of giving out straight information will keep rumors from spreading uncertainty. But there will always be rumors, and the supervisor must be alert to them. He should report the rumor to his superior and ask for information. Honest information is the only way to combat a rumor.



EVERY SOCK is inspected as it is taken from the knitting machine.



INSPECTOR takes work at random from the loopers' bench. She inspects and turns about 18% of the total production and makes one report daily.

Hosiery SPOT INSPECTION Keeps Faulty Work Low

● Examination of about 18% of Komet hosiery at Athens Hosiery Mills, Inc., quickly informs management of any trends away from first-quality standards

Athens Hosiery Mills, Inc., Athens, Tenn., uses a spot-inspection system that requires a minimum of handling and supervision; and yet the system gives an excellent over-all picture of quality trends. From 15 to 20% of men's ribbed socks are examined. This figure is based on the fact that first-quality work runs higher than 95%.

One inspector checks the production of the whole department. She also turns the goods for dyeing or preboarding as they are inspected.

Every sock receives a thorough inspection by the knitter as it is taken from the knitting machine. These goods are placed in bags with a ticket on the outside showing the date of knitting, the knitter's number, style, size, and quantity.

Loopers About 4 Hrs. Ahead

The bags are placed by the knitter on a bench near the looping section after a perforated section has been torn from the ticket for payroll figures. The loopers personally procure the work from these bins. They stay about 4 hrs. ahead of the knitters.

Some loopers concentrate on socks made from Helenca yarn. Other loopers work on cotton socks. There are different rates for each type. When the work is finished, it is again bundled in the bags and placed on a bench close to the inspector's station.

Unless the inspector has received other instructions from Knitting-Room Superintendent Sam Pendergraph, Jr., she takes samples at random from the top lot of goods on the pile. In this way, the work is still fresh from the knitting machines and any faults not spotted by the knitter are quickly corrected before much bad work is produced.

The inspector removes the socks from the bag and draws each one on a frame, which can be turned 360°. She examines both sides of every sock in the lot. She checks for drop stitches, faulty needle lines, poor looping, and faulty patterns.

If excessive bad work is found, the inspector calls the

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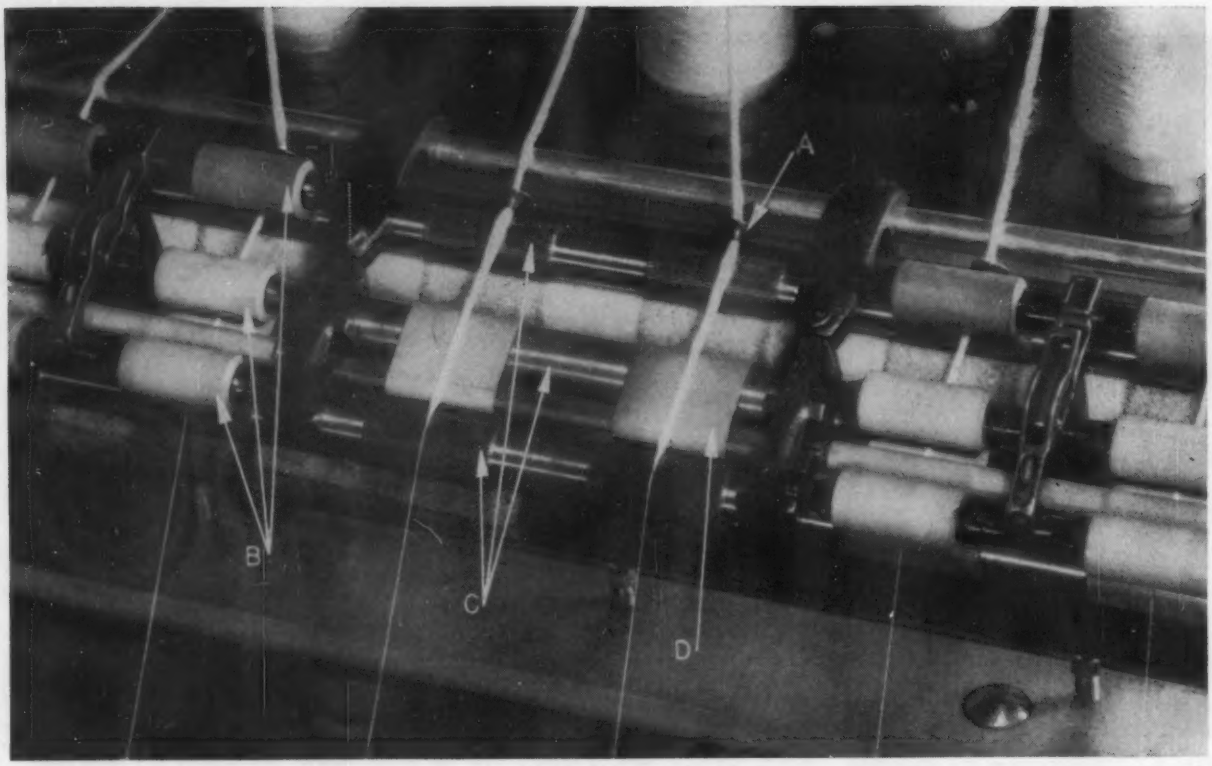


GOOD SPINNING DRAFT depends on good, well-kept trumpets *A*, top rolls *B*, steel rolls *C*, and aprons *D*. It is poor economy to save money on these parts at a sacrifice of good spinning.

"Creeping Deterioration"— Enemy of Spinning Rooms

• The trouble with machine-maintenance is this: when you pinch costs, you can see the money you save but you can't see what it costs you in the long run. Many mills have wound up with their machines "in the floor" from pinching too hard on maintenance.

• Here is a realistic look at such creeping deterioration and a systematic maintenance program for spinning frames.

By A. L. LANDAU

A REAL DANGER in modern mills is creeping deterioration. Nearly all mills have some sort of preventive-maintenance program for keeping production machinery running; but trouble comes when an overly cost-conscious management pinches maintenance pennies and, without realizing it, loses dollars in profits.

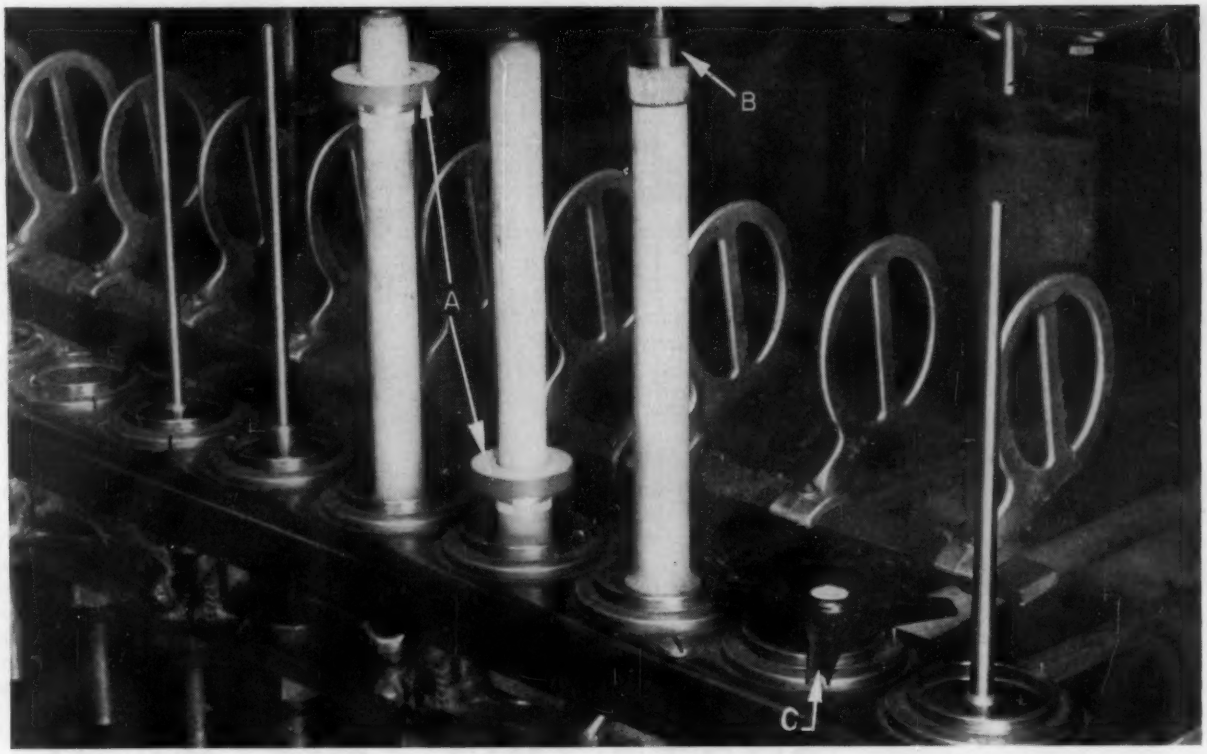
Narrow profit margins in the last several months have led many mills to economize. Unfortunately, many have included machinery maintenance in their economy programs. On paper, actual savings can be made on maintenance; but creeping deterioration in the form of machinery wear and obsolescence takes its toll in production, quality, and worker morale.

One of the favorite targets for the cost-cutting accountant looking for immediate savings is the spinning room. Maintenance costs in that department are fairly high, and considerable deterioration can take place before a drop in weave-room efficiency traceable to the spinning room occurs.

So let's take the spinning room as an example for a study of proper maintenance procedures to guard against creeping deterioration.

Good Maintenance Pays

Rather than seek means of reducing the number of overhaulers and fixers, the well-managed mill should now be examining its personnel and procedures to determine if adequate preventive measures are being taken. It should make sure that frames are overhauled at proper intervals and should stress the replacement of worn parts before they damage the other parts



INEXPENSIVE AIDS for keeping spinning frames in good condition include plugs *A* to speed spindle plumbing, bobbin point *B* for centering thread guides, and level *C* for aligning rings.

with which they come in contact.

It is poor economy to continue running a worn gear, even if it will still drive, if eventually it will wear out a whole train of gears or ruin a good stud. It is poor economy to overhaul a frame and then put back parts that will soon cause bad work or a breakdown. It is far cheaper to throw away parts with a short life left in them than to run them to the very last and so endanger either yarn quality or more-expensive components of the frame.

Select a Good Crew

A regular maintenance crew should be formed and should be given the responsibility for all major spinning maintenance. The crew need not be large but should have several specialists and a foreman.

Ideally, one man would specialize in inspecting and correcting spindles and would do all spindle plumbing. Another member of the crew should devote most of his attention to builder motions. The third mechanic should be on call for work above the roller beam and should be able to trace down causes of poor drafting; also, he should be able to polish and straighten steel rolls.

A definite procedure for overhauling and reporting should be followed as closely as possible. After a trial period has shown the time required per frame, a definite schedule for both periodic check-ups and overhauling should be drawn up. A routine check-up for each frame, progressing around the spinning room in an orderly manner, will assure the correction of many faults before they cause serious trouble.

This phase of the maintenance program is especially important because of its preventive nature. Small adjustments and immediate replacements of badly worn parts will save the time of the crew by catching the faults before extensive overhauling of an emergency nature is needed to keep the frame in production. If inspections are frequent enough, small jobs will not accumulate and so will not interfere with an orderly overhauling schedule.

Get Spinners To Help

Actually, this part of the maintenance program can be made easier by the spinners cooperating by pointing out troubles that are making their jobs difficult.

A plan followed successfully in a number of mills is to have the spinner mark the ring rail when there is an end down. If a number of ends down occur at the same spindle, it is clear that a mechanical defect, and not the stock, is causing the breakage; and the spindle is flagged for prompt checking and repair or replacement by the maintenance crew.

Set Up System for Overhauling

The other portion of the maintenance work is concerned with the complete overhauling of each frame at least once a year. A report form will prove valuable to management if a separate form is filled out for each frame overhauled.

From this report, the superintendent can note the condition of all vital parts of the frame and anticipate further replacements. He will also be able to make more-concrete recommendations regarding the maximum and minimum inventory of spare parts for the future, based on the record of parts already replaced and on the forecast of the overhaulers as to pending needs.

Such information will help the mill save money on future orders of replacement parts by comparing the life and performance of parts from different suppliers or from the mill's own machine shop.

The report form should include a checklist of all important components of the frame. Such a list will assure, and place responsibility for, inspection of each part and will establish a definite procedure by which the overhauling is to be carried out. Report-

ing on the completion of each frame, especially when a schedule has been established, will keep the overhauling crew alert and will discourage waste of time and careless work.

Follow Good Routines

A routine procedure has been worked out by some mills, which, if followed, will permit rapid overhauling and will prevent overlooking any part of the frame.

Step 1—Preparing the Frame

Overhauling should start when the bobbins are full so that the frame may be doffed with full packages. After doffing, the ends should be broken out by loosening the draft gears and the roving taken from the creel and stored under cover. Roving should not be left on the frame or stored uncovered to become scuffed and soiled. Leaving roving in the creel will prevent a complete inspection of the creel and will hamper the work of the crew.

Step 2—Top Rolls

The top rolls are next. After inspection, they are ready to be sent to the roll shop for rebuffing or re-covering, if needed. If the top rolls are in good condition, they should be stored ends up in a box; they should never be piled in a box but should be carefully arranged for storage so that they will not become oil-stained, crushed, or scuffed.

It is easy to be drawn into false economies in reconditioning top rolls because of the cost of replacing or re-covering so many units. Rolls should be checked with a straightedge to see if a hollow has been worn in the center. Wear is most common at this point and is a serious source of uneven yarn because it allows bunches of undrafted fibers to be pulled through the drafting zone.

Some mills have adopted the poor practice of placing worn rolls at the back lines because they believe that the efficiency of the drafting is not too important at this stage. That is incorrect; the break draft is needed to unlock the twist in the roving and make it possible for the final drafting to arrange the stock in the smooth position that determines the ultimate quality and strength of the yarn.

Check Roll Covers

Next, the covering should be checked for any cracks, roughness, cuts, or oil stains that will catch and hold fibers, thus disrupting drafting and causing lap-ups. Neither wear nor surface defects are too serious with synthetic top rolls, since rebuffing will remedy the fault. However, with leather-covered rolls, the cost of reconditioning is much larger.

If leather is used, any roll that must be re-covered should be slashed with a knife to prevent new leather being put on old cushions that have lost their resiliency and can no longer grip the fibers for proper drafting.

Step 3—Scavenger Rolls and Clearers

Scavenger rolls and clearers follow top rolls for inspection, reconditioning, and safe storage. The major fault with clearers is clearer cloth worn smooth. A mill trying to save expenses will continue to use worn clearers without realizing that it is the nap that catches and holds waste fibers.

If the clearers have lost their ability to retain such clumps of waste, the matted fibers will accumulate for a time and will then be drawn into the yarn. Generally, this waste will cause an end down, decreasing efficiency and wasting good roving, or the waste will show up in the finished cloth as slubs. In either case, the total loss will far outweigh the cost of replacing the clearer cloth—which will have to be done eventually anyhow.

Step 4—Drafting-Element Parts

Cap bars, trumpets, condensers, and the remaining parts of the drafting element are now ready for inspection. The use of worn trumpets and condensers is poor economy. Trumpets and condensers should last for years and represent only a small investment, but they play an important part in positioning the strand of roving for effective drafting.

The back trumpet controls the traversing of the roving across the length of the rolls to prevent rapid wear of the top rolls. When worn trumpets and condensers are used, drafting will suffer and there will be a drop in yarn quality. When the trumpet is not able to perform properly, the expensive top rolls will wear out more quickly and will require reconditioning more frequently. It is much more economical to buy new condensers and trumpets as a part of preventive maintenance.

Step 5—Steel Rolls

The steel drafting rolls are now ready for removal from the roll stands. This job is an operation requiring great care to prevent bending the roll. Enough men should be used to lift the roll so that there will be an even distribution of weight along the entire length of the roll, with men supporting the roll at short distances apart. A vital part of the annual overhaul is to clean, scour, and polish steel rolls—the heart of any drafting element.

Start by clearing off all waste imbedded in the flutes of the rolls; then wash off oil and gum with a solvent or kerosene. Each roll boss should then be carefully examined and nicks or burrs smoothed out with a fine file.

The final step is to scour the rolls with a mixture of whiting and kerosene. Rock pumice stone may be used if the rolls are very dirty or rusty; but rough abrasives such as emery cloth should never be used, since they will dull the edges of the flutes and destroy the fiber-gripping ability of the roll.

Look for Roll Nicks

A large number of nicks and scratches on the rolls indicate that lap-ups are being cut off with a knife. This practice should be prohibited. A soft brass roller hook that will not cut the steel roll is the only tool that should be allowed to touch the rolls.

Roll scouring and restraightening takes time and therefore may be an expensive part of overhauling, but it definitely should not be neglected. Rolls that are rough because of nicks, scratches, or rust will catch and pull fibers during drafting, cause production losses as a result of lap-ups and ends down, and can be a serious factor in causing loss of yarn strength and evenness.

Rolls that are more than 0.003 in. out of line have been proved to have an effect on drafting evenness, and the degree of unevenness rises rapidly as roll eccentricity increases over 0.003 in.

Step 6—Rings

Ring rails, rings, and separators follow the drafting element in an orderly overhauling procedure. Separators should be straightened and polished if there are any nicks or burrs that could catch the ballooning yarn during spinning. Loose separators have to be reset and tightened in their correct position.

Rings are extremely important components of the frame and demand a minute inspection. Worn rings can be a serious cause of losses in yarn quality and frame efficiency. Although replacement of rings represents a considerable investment and a ring will spin even with considerable wear, it is a mistake to try to get the very last pound of yarn from a set of rings.

When you consider that worn rings reduce traveler life and have a direct effect upon yarn strength, it is obvious that using rings in poor condition is another example of saving

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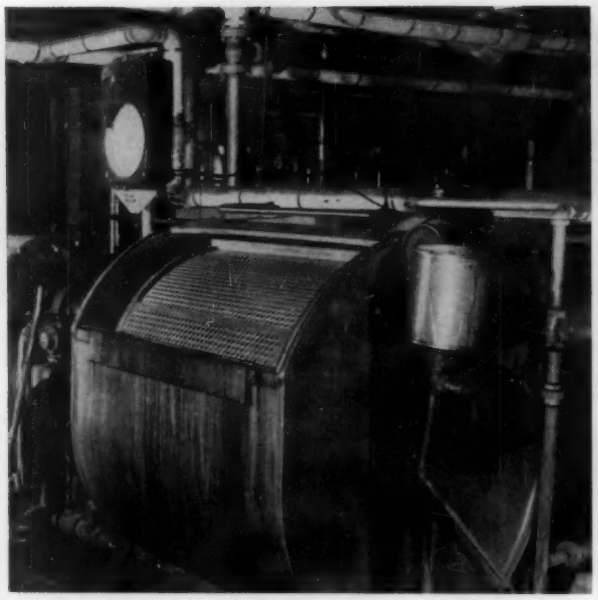
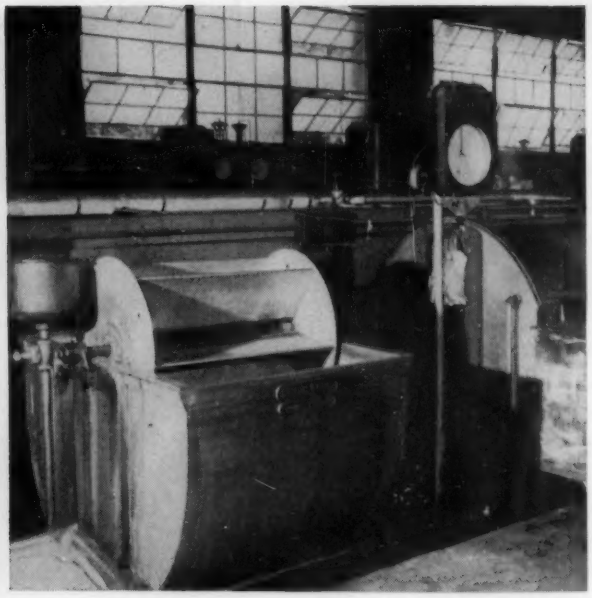


ROTARY MACHINES are used for nylon sweaters.



PADDLE MACHINES are preferred for Orlon sweaters.

How To DYE SWEATERS In Hosiery Machines

Universal Dyeing Co., Philadelphia, Pa., dyes full-fashioned sweaters made of spun nylon and Orlon in hosiery-dyeing machines. Main points in processing are—

- **Nylon sweaters are preset before dyeing**
- **Bath temperatures are controlled to prevent wrinkles**
- **Dyeing cycles are kept constant by automatic controls**

By **ROBERT W. PINAULT,** Assistant Editor, TEXTILE WORLD

GARMENT DYEING is generally considered to be outside the field of the textile dyer and finisher. The natural fibers and older synthetics did not lend themselves well to dyeing after having been manufactured into clothing of any type. However, full-fashioned sweaters made of nylon and Orlon are dyed in a wide variety of fast colors in hosiery-dyeing machines at Universal Dyeing Co., Philadelphia, Pa.

Most of the garments are completely made up before dyeing. A few styles, such as cardigans, are cut and finished with buttons and buttonholes after dyeing. No final pressing or packing for the trade is done at the dyehouse.

Nylon Sweaters Are Heat-Set

Nylon full-fashioned sweaters are carefully laid out in small piles of 8 to 10 garments, one on top of the other. Any wrinkles or creases are smoothed out so that they are not permanently fixed in the cloth in the setting operation that follows.

When a sufficient number of sweaters have been stacked and arranged for setting, they are run into an autoclave, where they are steamed at 270° F. for 5 mins. This steaming insures true sizing and subsequent freedom from wrinkles during the dyeing process. In this class of goods, no attempt is made to stretch or distort the garment to provide a variety of sizes from one machine setting.

The nylon sweaters are cooled after presetting and placed six to a bag, or net, for dyeing. Best results at this plant have been from Dacron nets. They are strong and resist dyeing with the colors used for nylon. What color they do absorb presents no bleeding-back problems from lot to lot.

How They Are Dyed

A typical dyeing sequence includes:

1. Scour at 200° F. for 20 mins. with a synthetic detergent.
2. Rinse with warm water and drop bath.
3. Add assistants and dyestuffs in a new bath and raise to 120° F.

CONTINUED ON PAGE 232

SHUTTLE IS REMOVED from the loom, and the partly expended quill is replaced with a full one. Walking to the instrument, the operator examines the shuttle for washboard, loose tips, and indications of a loose spindle nut.

OPERATOR MEASURES TENSION of the filling yarn on the Tension-Rite instrument. If the tension is beyond set limits, she flags the loom. It then becomes the loomfixer's responsibility to eliminate the cause of the defect.

FILLING-CONTROL System Cuts Seconds and Saves Materials

A filling-tension analyzing instrument combined with a system for checking looms regularly has given Wm. Skinner & Sons higher quality at less cost by—

- **Decreasing seconds**
- **Cutting reed and shuttle replacement**
- **Lowering yarn waste**

By MICHAEL LONDON, Assistant Editor, TEXTILE WORLD

SINCE INSTALLING a Tension-Rite instrument for testing the tension on filling yarns, Wm. Skinner & Sons, Holyoke, Mass., has had an appreciable decrease in seconds and savings in reeds, shuttles, and waste yarn.

The instrument positively gauges a critical part of the weaving operation and is used in conjunction with a system of regular shuttle inspection. It required three months for J. J. Williamson, general superintendent, to develop the system for the full capacity of the weave room where the instrument is used. The loomfixers were soon convinced of the merits of the system and have cooperated fully.

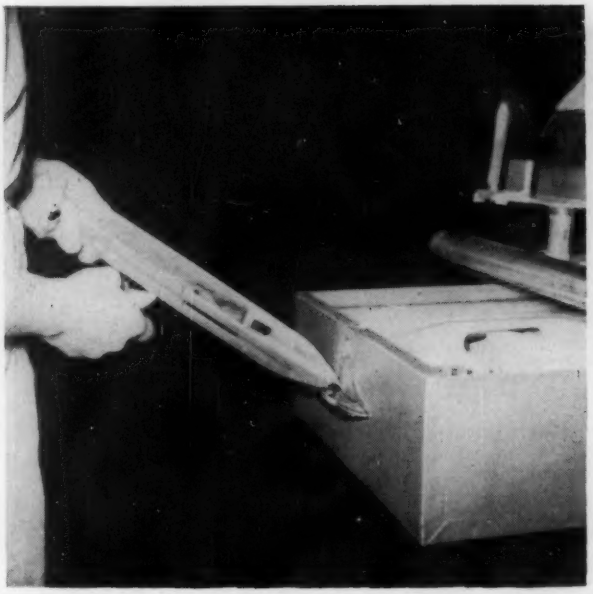
Only one operator, Irene Mainville, operates the Tension-Rite instrument, and she checks the shuttles from 364 Draper XD looms. Working on the first shift, she checks each loom at least once a week.

The weave room produces lightweight suitings, dress goods, lining material, and bridal satins. Nylon, Dacron, Orlon, acetate, viscose, cuprammonium, and silk are used. Warps are all filament yarns, while filling may be either filament or staple.

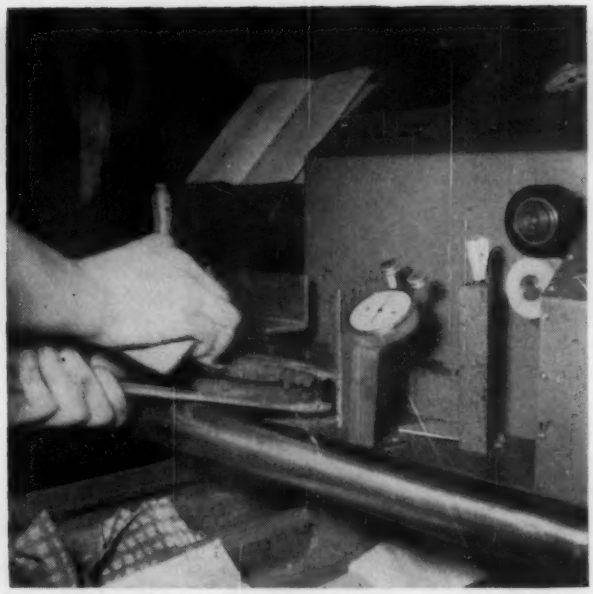
Operator Makes Minor Repairs

The operator, in checking a shuttle, stops the loom and removes the shuttle. Then she replaces the partly expended quill with a full one. On the way from the loom to the Tension-Rite instrument, she checks the shuttle for loose tips, washboard, and indications of a loose spindle nut.

Arriving at the instrument, the operator tests the filling for a predetermined tension. (The instrument is portable, and after checking 16 looms—four looms to a row—the operator moves it close to the next group of 16 looms.)



LOOSE FUR ON SHUTTLE is reglued by the operator. The open drawer in the instrument contains shuttle wrenches, sandpaper, wax, glue, and screwdriver with which to make minor repairs to defective shuttles.



ROUGH SHUTTLES are sandpapered. If the shuttle is in good condition, the operator cleans it and puts it back in the loom. If a shuttle is found satisfactory or requires only minor repairs, the loom is restarted immediately.

If the shuttle is in good condition, she cleans it and puts it back in the loom. She also makes any minor repairs such as gluing loose fur, sandpapering rough shuttles, tightening loose nuts, and testing the shuttle eye. The drawer in the instrument contains the tools necessary for minor repairs: shuttle wrenches, sandpaper, wax, glue, and a screwdriver.

When the shuttle has a major fault such as washboard or a tension beyond set limits, the operator flags the loom; and it becomes the loomfixer's responsibility to eliminate the cause of the defect.

How Tensions Are Determined

The proper tensions for filling are determined as follows: Tensions on eight looms that are running very well are noted. Then the tensions are recorded from another eight looms that are running passably well. All 16 looms are then checked for any operating variations. If the looms are running under equal conditions, the tension producing the best results is used as the standard for the same styles.

The operator checks 75 to 100 shuttles in 8 hrs. If there are no major difficulties, she restarts the loom immediately after the check.

A chart attached to the instrument denotes the proper tension for each quality being run, and the operator writes the actual tension of the quill alongside the standard figure. Each loom is listed on the chart, and the operator also notes any major defects alongside the applicable loom number. If she finds a defect prevalent in a particular section, she reports the fact to the weave-room foreman or the general superintendent.

Operator Is Responsible

The operator is directly responsible to the general superintendent for the operation. She was hand-picked for the job, having previously been a weaver, a warper, and a smash hand.

If she finds a major defect, the operator flags the loom for the loomfixer. Within the next day or two, she rechecks the loom to see if it has been corrected; and if the loom is still not operating properly, she notifies the weave-room foreman.

All major defects are reported as soon as possible to the weave-room foreman; and if they cannot be corrected immediately, a report goes to the general superintendent.

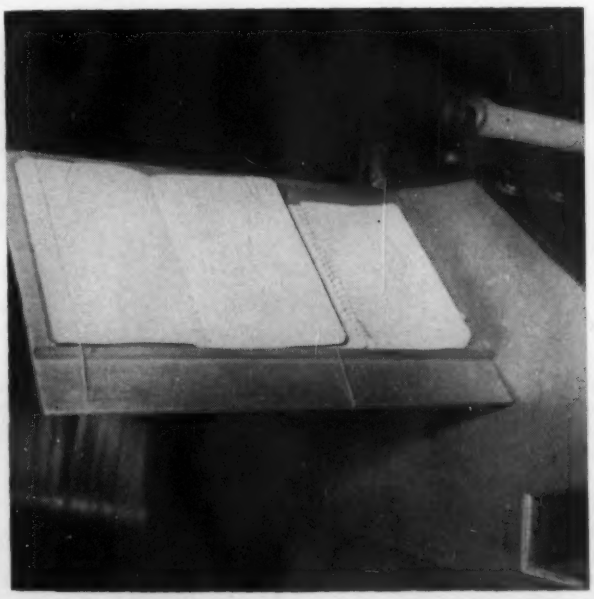


CHART ON INSTRUMENT denotes the proper tension for each quality being run. The operator writes the actual tension alongside the standard figure and also notes any major defect found in the shuttle.

TWO OF THE FOUR LAP WINDERS were built from old sliver lappers. The draw boxes were removed, sliver tables were rebuilt for 20 ends, and stop motions were applied to the machines.

How a Southern Thread Mill COMBS COTTON

This Southern mill uses an unusual combination of drawing and combing. The cotton is prepared on four-roll drawing and lap winders, and it is combed on Naismith combers. Lap-back, five-roll drawing follows the combers.

- **Here's how it is done—**

By W. A. THOMASON, JR.
Textile Engineer

A WELL-KNOWN SEWING-THREAD MILL has no problem of floor space in its card room. Therefore, when the owners decided to improve the combing process, they kept their low-production Naismith combers and economized wherever possible.

The mill had used sliver lappers and ribbon lappers to prepare the comber laps. Four-roll drawing followed the combers. The ribbon lappers were taken out, and 38 deliveries of the four-roll drawing were overhauled and equipped for eight ends up for use as preparatory drawing.

Two of the sliver lappers were made into 10½-in. lap winders. The draw boxes were removed, the sliver table was remade to take 20 ends, and a yardage knock-off was installed. Two new lap winders were bought to give the required production of comber laps.

The 24 Naismith combers were overhauled. The mill made three-over-four draw boxes for all the combers, and recently it has changed over several of them to four-over-five draw boxes.

For finisher drawing, the mill bought 32 deliveries of five-roll, lap-back drawing and two 9-in. lap winders. The results of the change have been very good. The mill now has an effective combing unit at comparatively low cost, and quality of the sliver is excellent.

Here's the Organization

Card sliver weighing 45 grains per yard is fed eight ends up to the preparatory four-roll drawing. A 730-grain comber lap is made on the 10½-in. lap winders from 38-grain drawing sliver. Sliver from the combers weighs 52½ grains per yard. It is made into an 800-grain lap and then into 55-grain finisher-drawing sliver.

ALL NAISMITH COMBERS have either three-over-four or four-over-five draw boxes. Variation of the combed sliver ranges between 20 and 28%. Production is about 15 lbs. per hr. per comber.

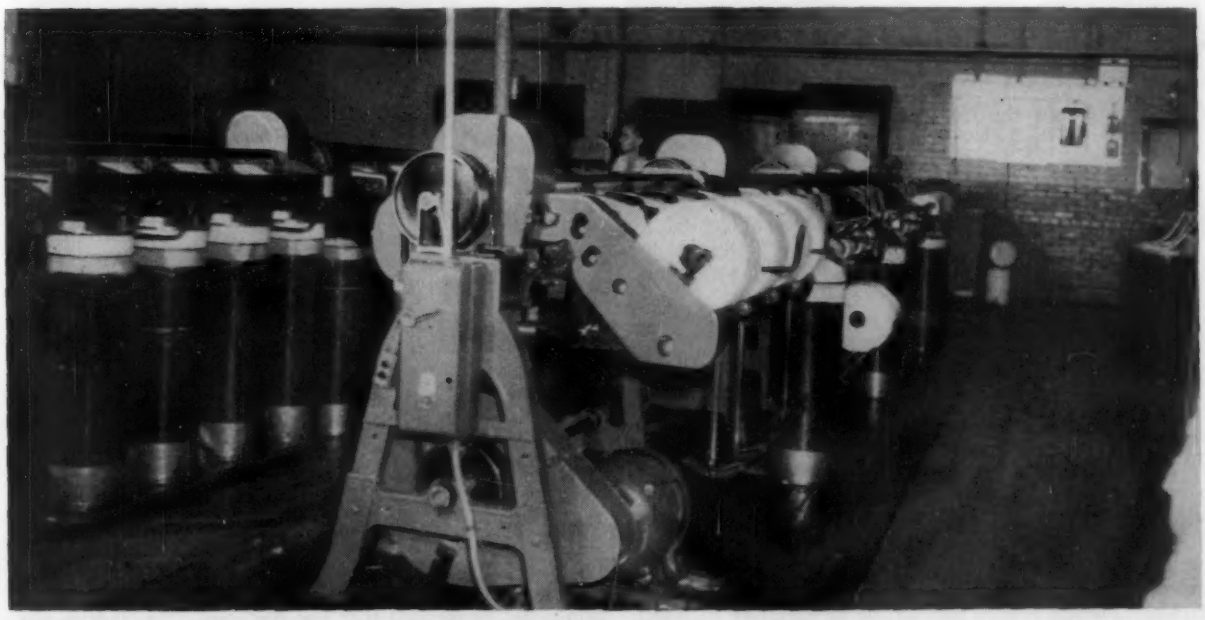
The preparatory drawing frames, which have 1⅛-in. front rolls, have a net production of about 12 lbs. per hr. per delivery. The front-roll speed is 450 rpm., which is 133 ft. per min. The combers take out 15% noil and have a production of about 15 lbs. per hr. One comber is down all the time for checking and repairs.

The five-roll finisher drawing frames also have 1⅛-in. front rolls. They run at 300 rpm. and have a production of about 12 lbs. per hr. per delivery.

It's a Five-Man Job

This combing unit is a five-man job. One operator runs the 38 deliveries of four-roll preparatory drawing, with eight ends up; one operator runs the four 10½-in. lap winders that make the comber laps; two operators run the 24 Naismith combers; and one operator runs the two 9-in. lap winders and 32 deliveries of five-roll, lap-back drawing. One fixer takes care of the equipment.

Stock at each process is checked regularly by the mill's laboratory. Card sliver is checked after each card is ground. If the variation is over 12%, the grinder must recheck that particular card. If routine combed-sliver tests show a variation of over 28 , that comber is checked.



ON THE FIVE-ROLL, LAP-BACK DRAWING that follows combing, the variation averages about 10% on a Saco-Lowell sliver tester. Two 9-in. lap winders are used to make laps for the 32 deliveries of drawing.

SAW-TOOTH BAYS, with 10,000 sq. ft. of glass surface, were insulated by a new method developed jointly with Duplan engineers. Five bays were insulated for about $5,500 against an estimate of $13,000 for the sandwich method. With the new method, 1-in. insulation was cemented direct to the glass surfaces.

GLASS SURFACES had to be scraped off with wire brushes. George Dudascik, plant engineer, points out that the mullion is a thermal conductor. The 1x2-in. insulation support at bottom is extra precaution.

How Duplan Saved 58% On SKYLIGHT INSULATION

- One-inch insulation, cemented directly to the glass, fills the panels
- Battens cover the mullions to stop the thermal short circuit
- Fasteners hold the insulation in place

By **JAMES MARSHALL,** Consulting Engineer

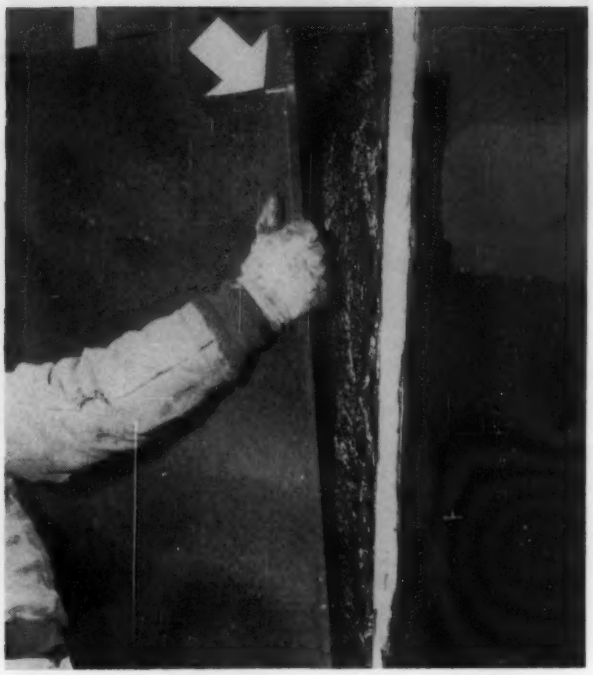
A NEW METHOD OF INSULATING saw-tooth bays saved over half of the estimated cost, based on the sandwich method, at Duplan Corp.'s Kingston, Pa., plant. Estimated at about $1.25 per sq. ft., the job would have cost about $13,000 for five bays; but with the new method worked out in cooperation with Duplan engineers, the job was contracted at about $5,500.

The saw-tooth roof at Duplan covered a throwing room with a humidity of approximately 55%. Calculations showed that condensation would begin to form on the double-glass overhead at 20° F. Further calculations showed that ½-in. insulation, applied to the exterior of the glass bays, would reduce the outside temperature to a safe level; but because of the height of the mullions, it was decided that 1-in. insulation would be better. One-inch insulation makes an even surface with the mullions.

Since the mullions go straight through to the inside, they create a thermal short circuit. So no matter how much insulation was applied to the glass, the inside of the mullions would always have condensation with low outdoor temperatures—starting at approximately 50° F.

With this problem, 1-in. insulation cemented directly to the glass was the cheapest solution. (The insulation thickness depends on the expected outdoor temperatures, the indoor temperatures and humidity, and whether the glass is single or double.) With an even surface, rigid insulation could be applied over the mullions. This batten was contoured so that roofing felt could be applied to make the

PRIMER (right panel) is applied in preparation for the insulation. Then the adhesive cement is troweled on thick enough to cover the mullion flanges. Then Miracle Clip fasteners are forced under the mullions and covered with cement.

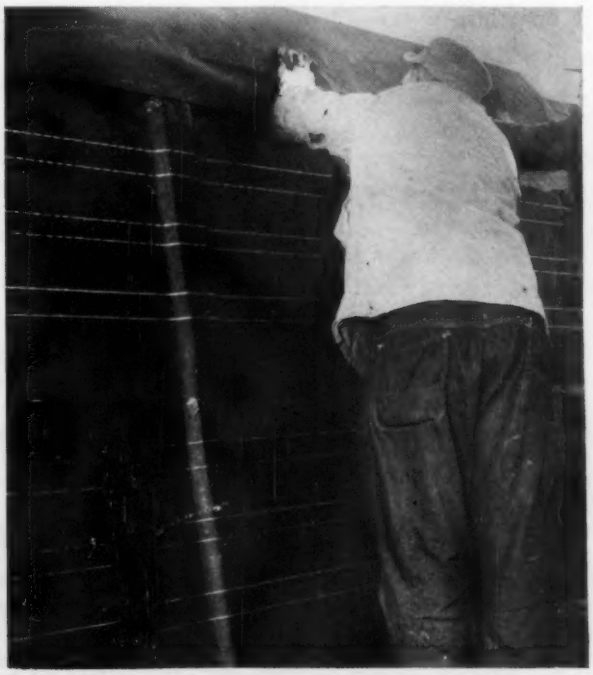


ONE-INCH INSULATION PANELS are put in place by fitting sawed slots (arrow) over the Miracle Clip nails. The insulation panels were previously cut to size by the contractor, since distances between mullions are roughly the same. Slots were sawed on the job.

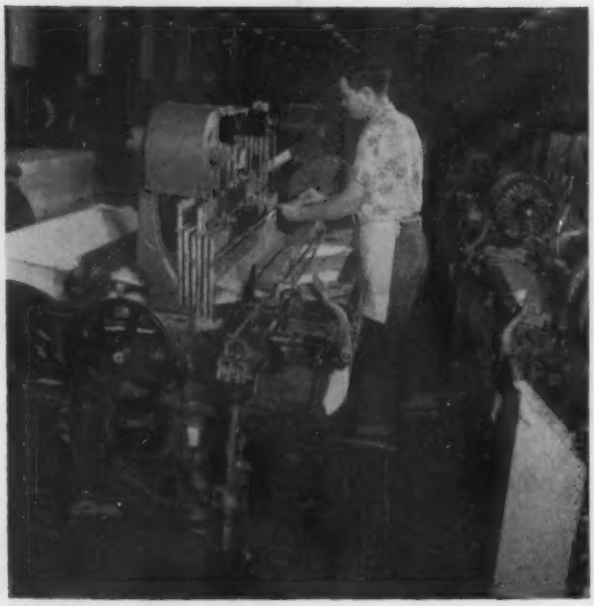
entire surface weatherproof. The glass surface acts as a vapor seal underneath the insulation.

The insulation job was let out on bids, and the local Johns-Manville dealer got the contract. An eight-man crew was able to complete the job in three weeks of working time.

READY FOR ROOFING PAPER, the basic insulation job is complete. Mullion covers, cut from insulation material by the contractor, are put over mullions; then the Miracle Clip washers (arrow) are put on the nails and the nails are clipped to make a permanent fastening.



ROOFING PAPER is cemented to insulation board, and a strip is put over the top to prevent leakage. As a final step, a roofing mastic is spread over the entire surface. No time lag is necessary between the steps, and an eight-man crew completed the job in three weeks.



WEAVER runs 50 looms on corduroy. He came to the first shift straight from the weaver-training program on the third shift.

BATTERYHAND fills the batteries on 80 looms on 21s and 24s filling. She was also trained on the third shift and now works on the first.

Here's a Modern WEAVE ROOM

- Everything is new—
  - Building
  - Employees
  - Looms
  - Cloth construction

By **RICHARD B. PRESSLEY,** Associate Editor, TEXTILE WORLD

A NEW WEAVE ROOM at Exposition Cotton Mills Co., Atlanta, Ga., contains the latest Draper cotton looms; and the building has all the features necessary for ease in cleaning and in weaving cloth. The last loom was warped and put in production in September, 1954.

At present, 100 looms are housed in the new weave room, and there's vacant floor space for other looms when they're needed. The weave room was built to level out production in the entire mill where yarn output was ahead of weaving because yarns are being shifted to fine numbers.

Looms Are for Fine Yarns

The looms installed in the new weave room are 52-in. X-2 models with aluminum lays, center-fork filling stop motions, electric warp stop motions, metallized take-up rolls, and endless checkstraps.

Bartlett let-offs were selected because fine yarn numbers are being run. Beam heads are 26 ins. in diameter.

The loom speed is 173 ppm., and Draper-Diehl drives are used.

The harness motions are clock-spring-top motions with auxiliary tape-selvage motions. Warps are drawn in with drawing-in machines, and all harnesses are the Drawtex type.

Two styles of corduroy are being run on the looms. Special harness cams have been designed to weave the corduroy with eight wales per inch.

One style of corduroy is run on six harnesses with 4,080 warp ends. The weight is 1.44; filling yarn is 24.65s; warp yarn is 26.3s; cloth width is 51 ins.; and the construction is 80x176.

The other style of cloth is a four-harness weave with 3,830 warp ends. The weight is 1.82; filling yarn is 21.25s; warp yarn is 26.3s; cloth width is 44 ins.; construction is 87x128.

SMASH HAND is experienced and was brought in from another job. In addition to smashing, she does other jobs such as putting on new reeds.

LOOMFIXER puts in a set of specially designed cams for eight-wale-per-inch corduroy. He is experienced and came from another job.

For Weaving Corduroy

Loom settings for the corduroy fabrics are standard X-2 loom settings. For example, the harnesses level 1¼ ins. from the fell of the cloth.

Shuttles have a strip of fur on each side from the front end to half the length of the shuttle. One bristle is also placed on each side.

The weave room is conditioned with seven lengthwise rows of atomizers. Exhaust fans are located along the two lengthwise walls of the building. The weave-room temperature is kept at 84° F., and the relative humidity is 83%.

Employees Are Trained

Most loomfixers, weavers, and batteryhands for the new weave room were trained in Exposition's training program held on the third shift.

Weavers, for example, are taught by an instructor. After a few days of instruction, the new weavers are given a small portion of a set of looms; and the number of looms is increased until the weaver has a full set.

The weave room is under the supervision of the general overseer of weaving. A second hand, who also has looms in another weave room, is directly in charge of the 100-loom weave room. This weave room is about 15% of his total job.

The number of looms makes it difficult to lay out the loomfixers' sections for efficient operation without the jobs being too small. Two elastic plans in loomfixers' job layouts are followed:

No. 1. Each loomfixer has 50 looms and does his own warping. This layout doesn't give a fixer a full job because the warps on corduroys don't run out fast enough.

No. 2. There's one experienced loomfixer and one loomfixer-learner on the 100 looms. The learner is given more looms as he becomes able to fix them. Then he is transferred to another section in the mill when he can run a full section, and another trainee is given the small section.

The weavers' jobs work out well; each weaver has 50 looms. Batteryhands have 80 looms on the filling being run at present.

There's No Condensation

The new weave room was built by Exposition's maintenance-department employees and is located under one of the other weave rooms.

Much of the building is below ground level. The lack of condensation in the building is perhaps the outstanding feature constructionwise. Ralph Edwards, general overseer of weaving, thinks the floor construction results in the lack of condensation.

The finished floor is maple. Underneath, ditches were dug between each bay. The ground and the ditch bottoms were covered with 4 ins. of gravel. Then 4-in. terra-cotta drain tiles were placed in the ditches with a ¼-in. space between them. A ¼-in.-mesh galvanized screen wire was laid over the tiles and was covered with gravel.

A tar-and-gravel base 4 ins. thick was poured over the gravel. A 2-in. layer of tar and sand was laid over the tar and gravel. While the tar and sand were still hot, 3x6-in. creosoted wood decking was placed on it. The decking has square edges and has a ½-in. space between each row.

A 1x6-in. tongue-and-groove subfloor was placed over the decking. Building paper covers the subfloor, and the maple floor is nailed to the subfloor. A 2-in. space was left around each wall for floor expansion.

SMOOTH BEAMS with no ridges are made possible with the aid of the tension compensators on the creel.

STOP MOTIONS are adjusted so that little tension is required to make the warper stop instantaneously.

Modern Warping Methods Make BETTER TRICOT BEAMS

Tricot beams with few lost ends and no ridged surfaces are made with the aid of—

- **Tension compensators**
- **Mercury-sealed stop motions**

By JAMES H. BLORE, Associate Editor, TEXTILE WORLD

HIGH-QUALITY TRICOT FABRIC is dependent on first-class beams. Blue Ridge Textile Co., Bangor, Pa., is making excellent beams after experimenting with various arrangements in the warping section.

Close humidity control keeps static problems low, and more-than-adequate lighting helps operators to find lost ends. Creels are, however, being rebuilt to reduce lost ends, ridged beams, and uneven tensions.

Compensators Relieve Drag

Warp compensators, made by Walter Kidde & Co., Inc., are provided for each yarn. The compensators are screwed to the upright posts of the creel near the yarn supply.

The yarn is run through the balloon shield on the compensator, between two disk tensions, and through an eye on a movable lever. The top disk is raised to relieve tension on the yarn when excessive drag occurs.

When 15-den. yarns are run, the compensator is set at 6 grams. This setting takes care of yarn-tension fluctuations that occur from cone-density variations, differences between full and empty cones, and the differences in warper speeds. Yarn tension is not increased as the warper builds up speed.

Smooth, even beams, without ridged surfaces, have resulted from installation of the compensators. When the warper stops, the warp sheet is held taut and broken ends are easier to find and thread.

Reiner creels are modified to accommodate the compensators so that the balloon-control eye is centered between the two spindles needed for magazine creeling. The left section of the creel was moved back about 2 ins. The mill's mechanics did this work and also installed the compensators.

Stop Motion Unaffected by Lint

Electric stop motions, built by Ed. J. McBride Co., Inc., have been placed at the front of the creel. The stop motion is not affected by lint, dust, or humidity because it is operated by a sealed mercury switch.

Although 15-den. yarns are warped at 350 yds. per min., lost ends have almost been eliminated. When a break in the yarn occurs, the lost end is usually found between the eyebar and the eyeboard. The distance between the eyeboard and the creel is about 12 ft.

Sliding weights on the individual drop wires are adjusted for different weights of yarn. The weights are adjusted to a position about three-quarters of the way back along the drop wire. This setting assures low tension on the yarn and yet gives instantaneous stopping of the warper when an end breaks or runs out.

The tension bars on the stop motion are adjusted so that they allow the yarn to run in an almost straight line. This yarn position keeps tension low and yet is enough to hold up the stop-motion drop wires.

AlSiMag eyes have replaced the glass and porcelain eyes formerly used because they give less trouble and wear longer.

As a further aim to get the highest possible quality at Blue Ridge Textile Co., creels are swept daily and operators are instructed to keep creelboards free from lint and broken ends.

How To Dye ORLON and ORLON BLENDS

Here are practical dyeing methods now used for filament and staple fibers and piece goods. Important points include—

- **Select proper dyes and chemicals**
- **Use pressure-dyeing methods for better color yields**

BASIC DYES FOR ORLON are applied in a bath containing color, acetic acid, sodium acetate, and a nonionic surfactant. The sodium acetate serves to inhibit indicator properties of the older basic dyes. The bath is kept at the boil to obtain a good dyeing rate.

Recent developments in basic dyes are:

Du Pont Basic Yellow OL
Du Pont Basic Red 4G
Du Pont Basic Blue OB

These colors can be used as a base for many shades of satisfactory lightfastness for women's wear, and some are suitable for men's wear.

Careful choice of older basic dyes will give combinations that are satisfactory. The effect of the fading of one or more dyes may be to throw the shade off cast entirely.

As an example, Fuchsine and Victoria Green in many blue shades gives 20 to 40 hrs. Fade-Ometer fastness. However, if Fuchsine is used to shade reds and browns, much bluer shades result after 5 hrs. exposure. Victoria Green or Brilliant Green used to dull tertiary shades are not desirable for the same reason. Basic Blue OB is much better for this purpose.

Excess dye in mixture shades may cause blocking, with waste of dyestuff.

This Formula Spots Blocking

A formula that can be used to determine whether blocking will result in a mixture is:

$$\frac{\%\ \text{Basic Yellow OL}}{4} + \frac{\%\ \text{Basic Red 4G}}{4} + \frac{\%\ \text{Basic Blue OB}}{4} + \frac{\%\ \text{Basic Red 4G}}{4} + \%\ \text{Victoria Green small crystals} + \%\ \text{Brilliant Green crystals} + \%\ \text{Fuchsine Conc.} = K$$

If K exceeds 1.5, the excess will not dye the Orlon.

When light to medium shades are desired, a retardant such as Du Pont Retarder LAN is needed in amounts varying from 1 to 3% on the weight of the fabric.

Raw stock and yarn dyed in circulating machines with basic dyes are level in shade, and the process is growing in popularity.

Disperse Dyes on Orlon 42

Disperse dyes give good lightfastness and level dyeing in pale shades when applied at the boil in a bath containing a synthetic detergent. Fade-Ometer ratings of several disperse dyes on Orlon 42 are:

Maize	
0.15% Latyl Yellow YL	6
Baby Pink	
0.05% Celanthrene Cerise B	6
Baby Blue	
0.05% Celanthrene Brilliant Blue FFS Conc. 200%	6

Acid Dyes on Orlon

Orlon staple dyes readily by the cuprous-ion method with selected acid dyes at temperatures from 205 to 230° F. Reducing agents include hydroxlammonium sulfate, sodium bisulfite, and glyoxal.

Hydroxylammonium sulfate is preferred for use at the boil, while sodium bisulfite, glyoxal, or a combination of these are used at higher temperatures. Sodium bisulfite must be used in closed equipment to avoid loss of reducing power because of the low pH employed in the dyeing.

Hydroxylammonium sulfate works well with 2% sulfuric acid on the weight of fabric in the dyebath to obtain a pH of 2. Control of the reduction-oxidizing potentia[1] (Redox) is useful in establishing new formulas.

Fade-Ometer ratings for several acid colors on Orlon 42 are:

Du Pont Quinoline Yellow PN	5 to 6
Du Pont Orange II Conc.	4 to 5
Du Pont Orange RO	4 to 5
Roracyl Orange R	7
Du Pont Neutral Brown BGL	8
Du Pont Resorcin Brown 5G Conc. 200%	6 to 7
Du Pont Crocein Scarlet N extra	5
*Du Pont Milling Red SWB Conc. 125%	4
Pontacyl Carmine 2G Conc.	4
Du Pont Milling Red 3B	5
Du Pont Anthraquinone Rubine R Conc.	5 to 6
Pontacyl Violet 6R Conc. 150%	5
Du Pont Anthraquinone Violet 3RN	7
Du Pont Anthraquinone Iris R	7
Du Pont Anthraquinone Blue RXO	7
Du Pont Anthraquinone Blue SKY	7
Du Pont Anthraquinone Blue 3G	7
Du Pont Anthraquinone Blue RA	6 to 7
Du Pont Anthraquinone Blue AB	5 to 6
Du Pont Anthraquinone Green G	6 to 7
*Roracyl Navy Blue N (6%)	7 to 8
*Roracyl Black N (12%)	8

* Recommended only for pressure dyeing at 225° to 230° F.

CONTINUED ON PAGE 149

[1] *From a paper presented at the International Congress of Man Made Textiles in Paris, France, by J. F. Laucius and P. L. Meunier.*

A print of this illustration in black and white suitable for line reproduction for use in your advertising, available free on request.

A FACT: In 1953, 42 per cent of the full-fashioned hosiery machinery in place in the United States had been built prior to World War II. (Textile Machine Works, 1953 Statistical Survey)

In the hosiery industry, the one unyielding force is obsolescence. Compare the production of your least efficient machinery with a "Reading 100" Full-Fashioned Knitting Machine—in courses per minute, dozens per hour, salability of fabric. The "Reading 100" is not only a fast multiple-section machine, but it is also a reliable one . . . speed without interruption. And with every Reading Machine you get the benefit of Textile Machine Works' engineering help, service and technical experience. Let us present the "Reading 100" story in your office, at your convenience. Write us today.

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Full-Fashioned Knitting Machine

30 Sections 51, 60, 66 Gauge

Acid Dyes on Raw Stock

Orlon staple tends to shrink during dyeing; so a preshrinking process is usually given raw stock before dyeing in kiers. The kier is half-filled with water heated to 200 to 205° F. and the raw stock loaded in evenly.

The following is a typical dyeing procedure:

1. To the kier, add water and heat as close to the boil as possible (200 to 205° F.).
2. Load the raw stock and distribute as evenly as possible to prevent channeling.
3. Put cover on kier, fill with water, and adjust temperature to 160° F.
4. Add dissolved color and circulate for 10 mins.
5. Add dissolved copper sulfate, acid; circulate 10 mins.
6. Add reducing agent.
7. Heat to 195° F. at 2° per minute; hold for 10 mins.
8. Heat to 205° F. at 1° per minute, and run 10 mins.

If atmospheric-pressure dyeing is used, run at 205 to 210° F. for 30 to 60 mins. to get satisfactory color exhaustion.

If high-temperature dyeing is used, omit the acid in Step 5 and proceed with the following two steps:

9. Raise temperature to 210 to 230° F. at 1° per minute, and hold for 30 to 60 mins. to obtain satisfactory color exhaustion.
10. Reduce temperature, drop bath, rinse, scour, and finish as required.

This procedure will vary with the temperature used and the choice of reducing agents.

A few satisfactory reducing agents and the concentration for 1 lb. of cupric sulfate crystals are:

Hydroxylammonium sulfate (HAS)	9.4 to 0.5 lb.
Hydroxylammonium sulfate-glyoxal mixture	0.5 lb. HAS 0.25 lb. glyoxal (30%)
Sodium bisulfite	0.25 lb.
Sodium bisulfite-glyoxal mixture	0.25 lb. bisulfite 0.25 lb. glyoxal (30%)

Hydroxylammonium sulfate is used for dyeing at 212° F. or under and is best added in three portions, one at each 20-min. interval, to retard dyeing rate. The other reducing agents are used for pressure dyeing and are added at 180° F. followed by closing of the kier and increasing the temperature.

Sodium nitrate (0.5%) is added as a corrosion inhibitor for stainless steel.

Top Dyeing Filament Orlon

Top dyeing in pressure vessels is successful when liquor pressure is reduced to avoid excessive channeling.

Filament fiber is much more difficult to dye than staple, but selected acid dyes used by the cuprous-ion method give satisfactory results. Except for very light shades, carriers such as o-phenylphenol must be employed when basic dyes are used. Piece goods tend to dye unlevel because of yarn variations. Filament yarn and thread dyed at 230 to 250° F. show good fastness properties in a complete range of shades with acid or basic dyes.

The desirable features of high-temperature dyeing of piece goods has resulted in the development of new machines such as the Barotor by Du Pont and the tricot dyeing machine by Burlington Engineering Co.

In the application of acid dyes to Orlon 81 by the cuprous-ion method, it is necessary to increase the amount of copper sulfate 50 to 100% over that used for staple.

Some satisfactory acid dyes for use on filament Orlon are:

Quinoline Yellow PN
Roracyl Orange R
Du Pont Orange RO
Du Pont Neutral Brown BGL
Pontacyl Fast Red AS
Pontacyl Carmine 2G
Roracyl Violet 2R
Du Pont Anthraquinone Blue SWF
Du Pont Anthraquinone Blue RA
Du Pont Anthraquinone Green G
Roracyl Dark Green B

How To Dye Wool-Orlon Blends

Orlon-wool blends can be dyed by using basic dyes on the Orlon and acid dyes on the wool. Care in following the routine below will avoid precipitation of the mixture of acid and basic dyes. Where it is important to avoid staining the wool, dispersing agents must be aliphatic in character. With neutral dyeing (milling types) the procedure is:

1. Wet out material at 110° F.
2. Add 0.5% Capracyl Levelling Salt, 0.3% sodium acetate, and 0.3% acetic acid; run 10 mins.
3. Add milling dyes, run 10 mins., and raise to 200° F. in 20 to 30 mins.
4. Run 20 mins. at 200° F. (Milling dyes should be 80% or more exhausted; if not, add 0.2% acetic acid and run 20 mins.)
5. Add basic dyes dissolved in boiling water. (Do not run live steam into the mixture because of danger of tarring.) Run 10 mins.
6. Raise to the boil in 15 mins.; boil 30 mins.
7. Add balance of the acetic acid (total in dyebath, 2%).
8. Boil 2 hrs. or longer until 95% or better exhaustion is obtained.

During the boiling, the basic dyes transfer from the wool to the Orlon; this step is essential for good fastness. Additions of basic dyes are made at reduced temperatures (190 to 200° F.).

For light shades employing Du Pont Retarder LAN, a two-bath method is used. The Orlon is dyed in the first bath with a retarder, acetic acid, sodium acetate, and a nonionic surfactant. Conventional methods are used to dye the wool in the second bath. Capracyl dyes on wool are best employed in a two-bath process to avoid precipitation with basic dyes.

Orlon Dyed, Wool Undyed

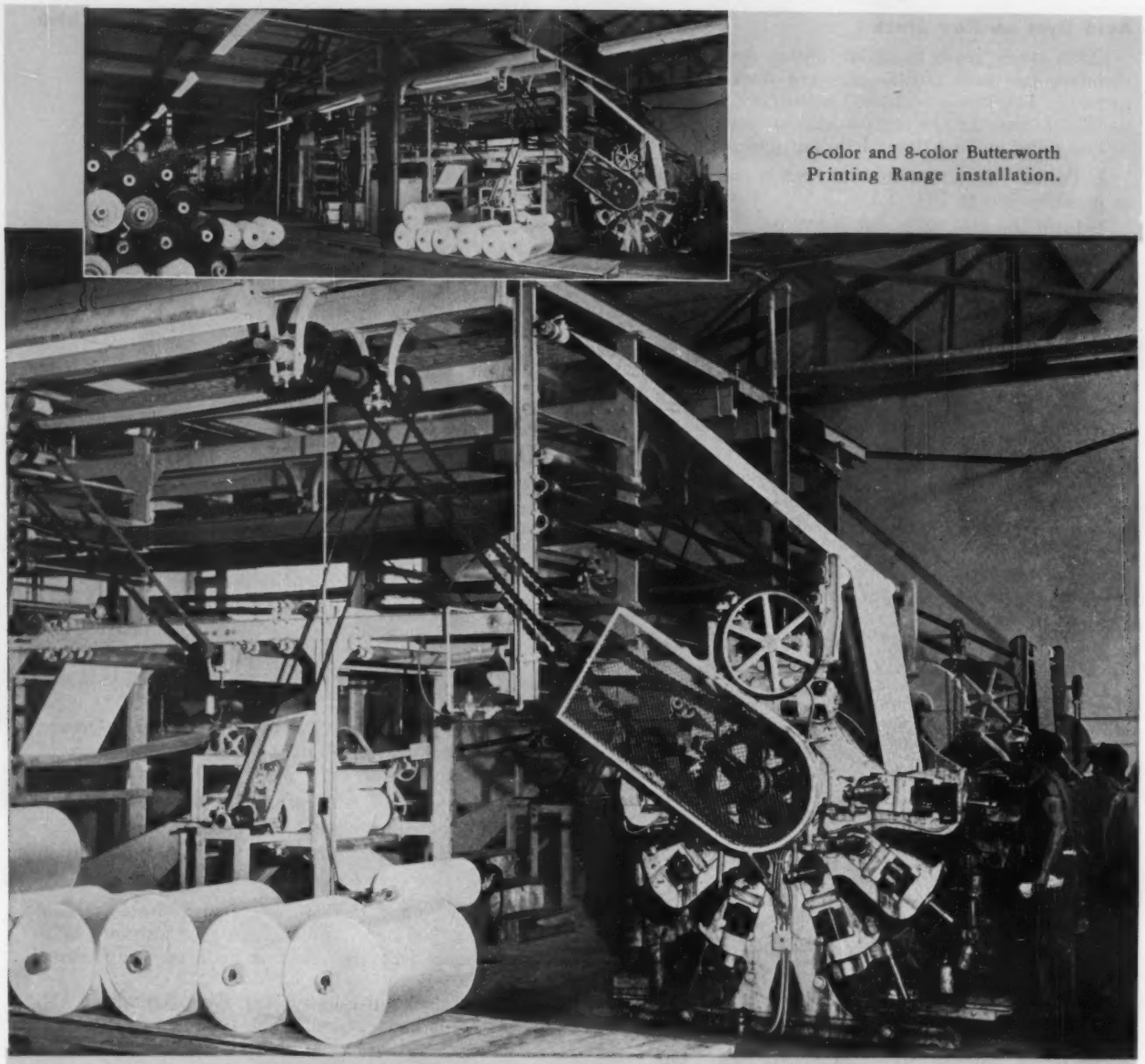
The dyeing of Orlon-wool blends to leave the wool white is done with basic dyes (to which the full amount of acid is added immediately) plus sodium acetate and Capracyl Levelling Salt. Dyeing is started at 160° F., and the bath is brought to the boil and maintained for 2 to 3 hrs. Any slight wool staining can be removed after dyeing by stripping with one gram per liter of Sulfoxite S with one gram per liter of acetic acid. This stripping of the wool will not affect the dyed Orlon.

Cross-Dyeing Orlon-Wool

Light and medium shades may be produced by methods outlined for solid shades. Deep browns and navies are dyed in two baths. The Orlon is dyed first, and the stain on the wool stripped off; then the wool is dyed as desired at 200 to 205° F.

Scouring after dyeing helps to remove any basic colors

CONTINUED ON PAGE 151



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left on the wool. This scour can be done with 0.8% Capracyl Levelling Salt and 0.3% acetic acid at 160° F. More or less acid may be necessary to hold the acid colors on the wool.

Orlon-Rayon-Cotton Blends

Light shades may be dyed in one bath with disperse dyes for the Orlon and directs for the cellulose fibers.

Medium shades require basic dyes for the Orlon, applied at 212° F. with acetic acid and Capracyl Levelling Salt. After complete exhaustion, the pH of the bath is brought to 7 or 8 with soda ash or sodium pyrophosphate and direct dyes are added for the rayon or cotton. Changes in the Orlon are corrected with disperse dyes.

Heavy shades are done in two baths, which consist of dyeing the Orlon with basic dyes, scouring in a fresh bath, and then dyeing the rayon in this liquor with direct dyes. Some heavy shades require the cuprous-ion method for the Orlon, the rayon or cotton then being dyed in a fresh bath. Organic sequestering agents and twice the usual amount of Glauber's salt are used to get full shades on the rayon.

If vat dyes are to be used on the cotton, basic dyes are best for the Orlon, which is dyed first.

Printing Orlon Staple

Orlon 42 may be printed with vats, basic, or disperse dyes. Since it tends to shrink in steaming at over 10 lbs. per sq. in., it is advisable to shrink the fabrics before printing.

Basic dyes are pasted with Acetine A, glacial acetic acid, and hot water until dissolved. Gum tragacanth is added for a thickener. After printing, the goods are dried, steamed 1 hr. in a cottage steamer, rinsed, and soaped at 160 to 180° F. for 10 mins.

Disperse dyes are satisfactory when printed from conventional disperse-dye formulas. Heavy shades require steaming at 10 to 15 lbs. pressure. Light shades may be fixed at 5 lbs. pressure. Rinsing and soaping of prints at 160 to 180° F. follows. Prints of medium brightness are produced with good crocking and washfastness. Lightfastness is in the 20- to 40-hr. range.

Vat Dyes

This class of dyestuffs is applied by the usual cotton method; and while comparatively dull and weak, they are of interest because of their superior fastness.

Printing pastes should not include hygroscopic agents, since they promote flushing.

CONTINUED ON PAGE 236

Prevent Motor-Control Failures With Scheduled Maintenance

► Maintenance of electric switches and starters is a constant job. But you have to choose between maintenance and failures.

AN EFFECTIVE MAINTENANCE PROGRAM for electric switches and starters must be planned to eliminate several conditions that lead to failure of the enclosures and motors. The most-common problem and one of the most serious is keeping the equipment clean.

Keep Enclosures Clean

The NEMA 1-A enclosure now being used is easing the cleaning problem greatly, but most textile plants still have a large percentage of general-purpose enclosures.

Keeping switches and starters clean can be controlled by periodic inspection and cleaning schedules. Cleaning is done with compressed air or with vacuum cleaners, and this cleaning is followed by wiping the surfaces with a dry cloth.

Dust accumulations within enclosures decrease the radiation of heat from the current-carrying parts, bind the moving parts, and tend to cause flash-overs of the live parts when the dust gathers on insulator blocks.

Keep Connections Tight

Loose connections are a constant problem. Vibration and alternate heating and cooling loosen nuts and screws. Loose connections also result from the poor work of careless electricians. Most of the trouble caused by bad connections on solderless joints comes from improperly cleaning and tightening joints when repairs are made.

Loose connections in controls and control circuits are especially bad because the current is usually so low that it gives intermittent trouble but still does not heat the connection enough to make the trouble show. A high-resistance connection causes spasmodic operation in some controls and is hard to trace.

Compression-type connectors and terminals have corrected the connection faults on small conductors.

All connections in switches and controls should be checked regularly and kept tight to prevent failures that result from nuts and screws loosened by alternate heating and cooling, and vibration.

Replace Bad Contacts

Contacts should be checked regularly, and worn or badly burned ones should be replaced. When checking contacts, be sure: (1) all contacts make up at the same time, and (2) the contact pressure is sufficient. Contact pressure is more important in controls than contact area.

When copper contacts are dressed, always use a fine file. Abrasive cloth or paper should not be used because they may leave nonconducting particles on the contact surfaces.

Worn control parts caused by friction are common. Most of this friction can be overcome by properly lubricating the operating parts with a light oil; but excessive lubrication should be avoided.

Arc chutes or barriers should be checked, and badly burned or broken ones should be replaced. This maintenance practice prevents flash-overs and burned pole pieces.

All overload protective devices incorporated in the controls should be tested for proper operation to be sure the control will disconnect the motor at the rated overload.

Motor controls operate at about the same rate of efficiency with which they are serviced; and the key to the whole maintenance problem is properly trained electricians who take pride in their work.

Based on a paper presented by K. A. Richardson, Bibb Mfg. Co., at a recent Atlanta, Ga., meeting of the Textile Subcommittee, American Institute of Electrical Engineers.

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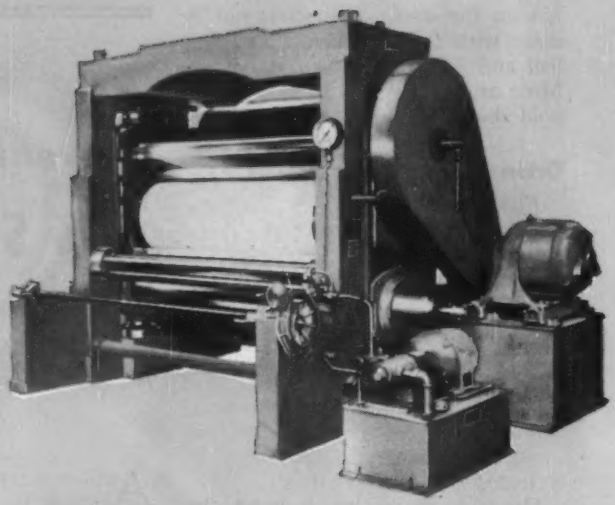
Van Vlaanderen's superiority is based on the correct design of each part to make a smooth operating unit. Take the 80 Ton Hydraulic Calender, for instance. Unit construction eliminates the need for special foundation and anchor bolts. Full 80 ton nip pressure is secured with only 770 pounds of oil pressure. This low pressure is possible because of the exclusive Van Vlaanderen large-area hydraulic ram designed with precision made pistons and four compression rings. Spherical roller bearings enable a 25 h. p. motor to easily drive the machine at 75 y.p.m. 16" top and 20" bottom rolls are made of turned, ground and polished chilled iron, channeled for steam. 22" intermediate roll is of bonded cotton on forged steel shaft.

All Van Vlaanderen Calenders have many important quality features. Ask us to send you information on the calender that interests you.



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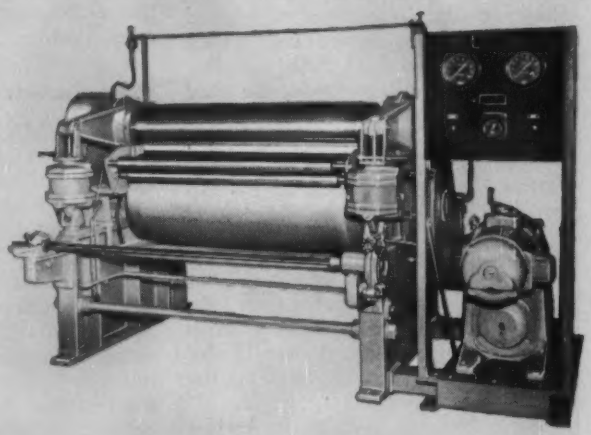
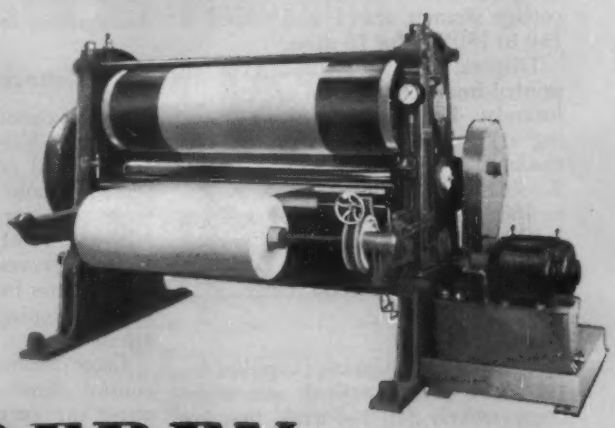


15 TON HYDRAULIC



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Checklist for Sliver and Ribbon LAPPERS

- From the machine condition, you can check processing troubles
- From the results, you can check the cause and the remedy

By JOHN E. ALLEN

Condition	Result	Remedy
Belts Dirty; dry	Slippage. Face of belt burned. Low speeds and loss of production	Clean and dress belts properly
Clearers Dirty; loaded	Bunches in work	Pick clearers more often
Doffing Ends double at start of new lap	Thick ends. Damaged half laps and top combs if lap runs out	Take more care when starting new lap
Lap Frictions Dirty leathers	Soft laps	Inspect leathers and keep them in good condition
Lap Rack Unevenly set	Poorly condensed laps	Set evenly
Rolls, Top and Bottom Dirty and oily	Dirty and oily work	Clean and oil according to mill's standard
Sliver Lifting Roll Dry; dirty	Poor contact. Uneven work. Bunches	Check cleaning and oiling schedules
Stop Motions Not operating properly	Uneven work. Broken needles	Inspect daily. Set so that machine stops when end is within 6 ins. of back roll
Tables, Pans, Plates Dirty	Bunches. Uneven work	Wipe daily with whiting

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- Designed to meet the exacting specification of the original machinery.
- Guaranteed by Saco-Lowell to give smooth, trouble free operation.
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POINTERS for SUPERVISORS

Your effectiveness as a supervisor depends on how well you direct the efforts of the people under you. And to get them to work effectively, you have to learn—

The Art of Giving Orders

By M. A. CROSS, Director of Industrial Relations, Dan River Mills, Inc.

ANY measurement of your performance as a supervisor is in fact a measurement of the performance of the whole work group under your control. Obviously, then, how well you carry out your job will not depend exclusively on your technical knowledge, your ambition, and your desire to do a job right; it will depend in large part on how effectively you transmit your orders to the people under you who do the work.

You might agree that this is a simple deduction and that giving orders is just "doin' what comes naturally." Actually, is this true? Why does one order produce poor results, and another good? Why are some orders misunderstood? Do all people react the same to a given order? As a matter of fact, have you given any conscious thought to the way you transmit your orders and what you might do to make them more effective?

Here are a few considerations about giving orders that merit your attention. At the very least, they may stimulate your own thinking and lead to an overhauling of some of your past habits.

1. Orders should take into account the person they are directed to

It can make a difference in what you tell an employee whether he is experienced or inexperienced, fully acquainted or not previously acquainted with the specific duties to be performed, and whether he requires very little or detailed supervision. It can make a difference if the employee is the type who uses his initiative to go beyond the routine requirements of the job, or if he is a person who customarily does only what he is told and waits for further instructions before he proceeds one step further. It can make a difference if he works well with other people or works best alone. All these considerations and others that will occur to you affect how orders should be given.

For example, let's say you're a stockroom supervisor. You want a check made and a report written on loom parts in stock. To Employee A, an experienced stock clerk familiar with loom parts, who always double-checks his figures, it might be enough to say, "Would you make a count of the loom parts we have in stock and give me a report?"

But with Employee B, it's a different story. He has had very little experience and is not completely familiar with loom parts, and you're not sure that he double-checks his figures. You probably should give him a list of the parts you want checked, a copy of the form on which you want the written report, and an explanation of how to make out the report. You would want to tell him to double-check his count, perhaps with another employee. You would caution him to come back to you for further information if he has any question about what he should do or if he encounters any difficulty. It would also be wise to check him shortly after he starts the job to see that he is following instructions accurately.

Undoubtedly, you can think of comparable illustrations with the people who work for you. But the point is worth repeating: take into account the person to whom you are giving orders.

2. Orders can take different forms

Basically, there are three ways to transmit an order—by command, by suggestion, or by question. To illustrate these three types of orders, let's go back to the stockroom example.

The supervisor could have said to Employee A, "Count the loom parts and give me a written report"—a definite command. He could have said "I think it might be a good idea for you to count the loom parts and give me a report on it"—an order in the nature of a suggestion, but nevertheless an order. What he did say was "Would you make a count of the loom parts we have in stock and give me a report?"—again an order, but this time in the form of a question.

The way you phrase an order should depend upon the circumstances and, as with the first point, on the people who are at the receiving end of the order. If speed and urgency are important or if an emergency is involved, a definite command right to the point is necessary. Where there is no emergency, often an order in the form of a suggestion or question will produce better results.

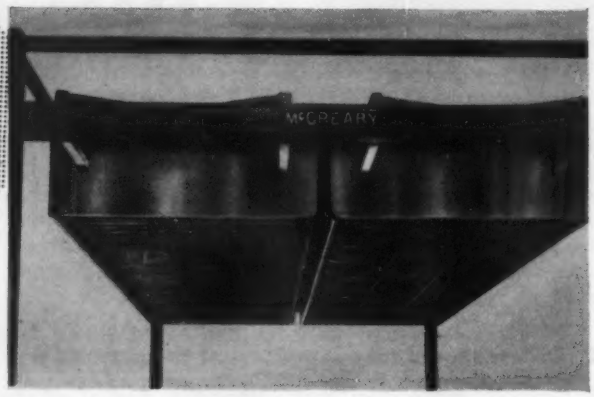
Nobody likes to be commanded all the time. Most of us like to feel we are engaged in a cooperative enterprise and will produce better if we feel we are working with someone, not for someone. Command orders continuously repeated make it very clear we are working for, not with; and therefore they tend to build resentment.

There is no single phrasing of an order that is always the best, to all people, under all circumstances. Some people are sensitive, some are thick-skinned. Some respond to a suggestion, some don't. Some need to be told forcefully exactly what has to be done, most do not. Some people work better under close instruction, some do not.

CONTINUED ON PAGE 196

Controlled Heat

for high speed setting of nylon and other synthetic tricots and woven fabrics



McCreary Electro Setting units provide a one-pass method of setting all synthetic cloths by radiant heat. Material can be accurately set after drying while still on the tenter frame, resulting in a fabric superior in dimensional stability and hand. The combination of high temperature alloy-sheath G-E Calrod* tubular heaters and G-E Reactrol Control* provides two advantages over ordinary thermostatic controls: (1) stepless heat and (2) lower cost operation. While the tenter frame is not in motion, or when fabrics not requiring setting are being processed, the electro units are automatically raised away from the fabric. These electro setting units can be installed separately, or as a component of the McCreary CONTINUOUS PROCESS for automatically feeding, drying and setting all synthetic cloths. Write for descriptive literature today.

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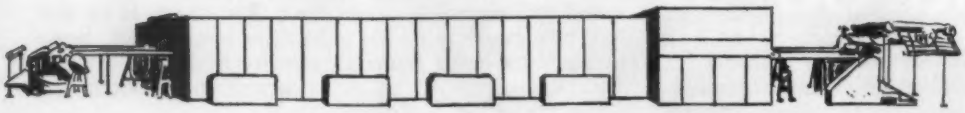

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Automatic Course Counter for Hosiery

The Marvelmeter counts stitches at the rate of 40 stitches per second. The instrument, used for controlling leg lengths and quality of hosiery, is built by Marvel Specialty Co., Inc., Paducah, Ky.

The instrument is contained in a small box, which can be taken from machine to machine and plugged in a 110-v. circuit. A calibrated dial records up to 150 courses. The reading is taken over a 3-in. length of stretched fabric.

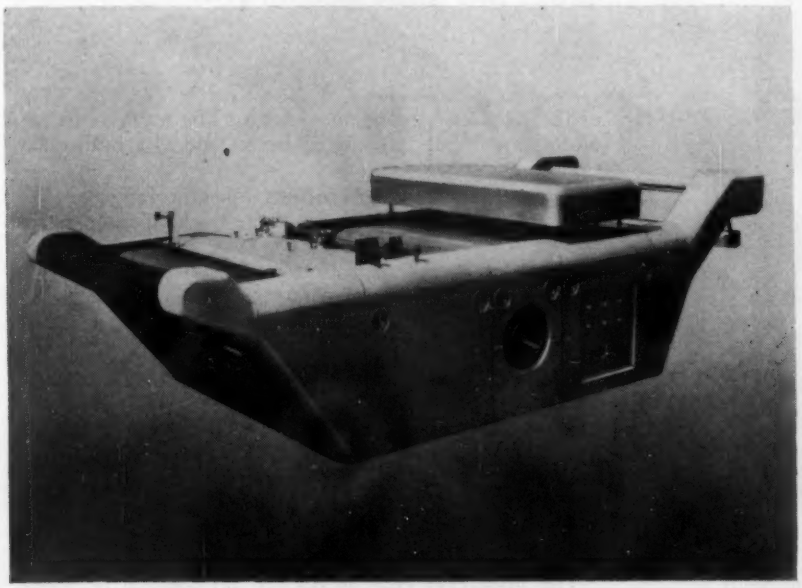
A full-fashioned or seamless stocking is gripped on two sets of rolls on the instrument. The fabric is locked in position at approximately 150% of normal stretch. Recording doesn't take place until the correct tension is obtained. Relaxation of the tension stops the recording.

A pointer runs along the fabric for 3 ins., feels out the stitches, and records them on the dial. Two pointers on the dial indicate the normal standard.

When the movable pointer rests between the two fixed pointers, the reading is ignored and no knitting-machine adjustments are made.

Tolerances of leg lengths have been kept to within ½ in. with the instrument. Selvage tests can also be conducted with the instrument, human error in counting is eliminated, and no time is lost between knitting and checking.

One operator can check production from 25 machines each 8 hrs. **(T-1)**



Shrinking Machine

The Sucaltex shrinking machine, suitable for fabrics in all widths to 72 ins. and any thickness, has been developed by Sucal Ltd., 62 Temple Ave., London E. C. 4, England. The fabric is steamed in a relaxed state by passage through a steaming area. Instantaneous drying by infra-red projection, followed by cold-setting and stabilization, enables the materials to be used immediately.

Consecutive pieces of cloth are fed into the steaming area, without the use of stretching or clamping aids, by a precision overfeed device. An automatic carrier system carries the cloth through, and the operator guides the cloth through the pleating blades or onto the rolling mechanism.

Pressure is controlled and the direction of injector sprays is adjustable.

A reducing valve provides the desired processing pressure for various ranges of cloth.

The required amount of moisture is removed within 4 to 5 secs. Only the moisture picked up in the previous steaming is removed in the drying process.

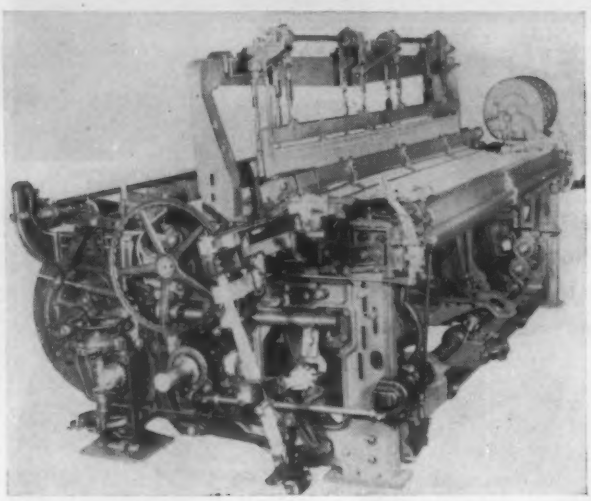
The material is cold-set by high-velocity air impact, which cools, sets, and stabilizes the material.

An anti-scorch system operates automatically when the machine stops.

Production: 10 to 40 yds. per min. Heavy materials: 15 to 20 yds. per min. The average speed over a wide range of dress, suiting, and overcoating fabrics is 25 yds. per min.

Pastel shades can be processed without marking, damage to the finish, or shade change.

Interchangeable units for applying insecticides, water repellents, filling, and softening agents can be accommodated. **(T-2)**



Wide Sheeting Loom

Draper Corp., Hopedale, Mass., has developed a wide sheeting loom that runs 20% faster than sheeting looms now in operation. The loom, a 90-in.-wide XP-2 model, operates at 142 ppm. on sheetings of 90 x 94 construction woven from 32s warp yarn and 40s filling yarn.

The camshaft has been lowered so that a large one-piece pick cam can be used. This new kind of cam accelerates the shuttle gradually; and the results are closer shuttle-flight control, easier shuttle boxing, and reduced wear on pick-motion parts.

Strengthened loomsides and extra-heavy bracing combine with the lowered camshaft to reduce loom vibration. Four camshaft center boxes and middle girders are used.

The conventional type of pick motion has pick shafts made from high-strength iron. The pick-shaft bearings are the ball-and-socket type.

The loom has a No. 6 Draper-Diehl power transmitter incorporated with a positive frog knock-off on the right-hand end; this arrangement gives quick starts and positive braking action.

Antifriction bearings are furnished on treadle rolls, treadles, take-up roll, pillow-block bearings for harness roll shafts, yarn-beam bearings, vibrating whiproll, whiproll arms, whiproll-shaft bearings, rocker-shaft bearings, pick ball, filling-cam-follower hub, protector-rod center bearing, bobbin disk, and transferer. All these bearings contribute to smooth loom operation, higher speed, and reduced parts wear.

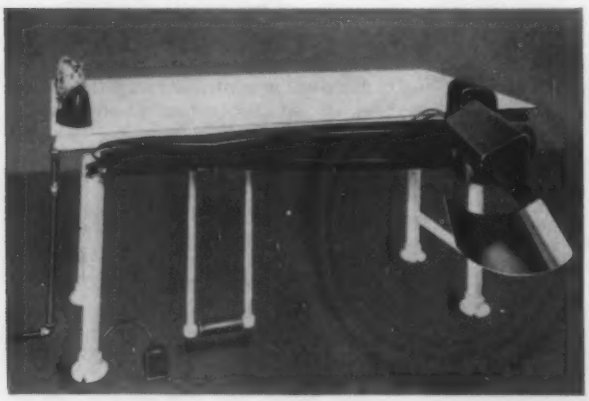
Antifriction bearings can also be furnished in other locations, if desired.

The stop motion can be raised, lowered, or tilted to suit weaving conditions.

Yarn beams are 26 ins. in diameter. Shuttles are 18½ ins. long and 2⅞ ins. wide; a 10⅛-in. bobbin can be used on special weaves.

Cloth on the cloth roll has a maximum diameter of 15 ins.

Other new and improved features of the loom are: (1) A No. 30 push-type knock-off, which operates by a direct push rather than by impact, gives smoother, easier action. (2) A simplified No. 25 Stafford thread cutter, with 20 fewer parts in its assembly, permits easy adjustment and less maintenance of settings. (3) A positive harness pull-down motion with needle-bearing treadles and Heim connections gives smooth operation. **(T-3)**



Hosiery Examining Form

An automatic expanding examining form, built by Textile Machine Works, Reading, Pa., doubles the production of the Reading hand-operated form. The machine has no motor power but is operated by air, and electrically controlled.

The simplified design reduces operator fatigue. The form corresponds to the shape of the stocking and expands the stocking from toe to welt. An adjustment screw provides for stretch regulation.

The unit fits into a space 69¼ × 71¼ ins., or 34 sq. ft. This measurement includes operator space but not aisle space between the units.

The counter is built into the table and controlled by an electric eye. The indicator disk may be set to lock automatically at any point between 1 and 10 doz.

The unit can be easily changed to process stockings for the Dunn system or for preboarding.

Stockings are examined on the wrong side out, and they are automatically turned as they are removed from the form.

The inspection cycle is stopped for removal of rejects by a foot-operated switch. **(T-4)**

Packaging Coder

The Rainbow Trans-leaf coder, manufactured by Industrial Marking Equipment Co., Brooklyn, N. Y., automatically imprints cellophane and similar wrapping materials. The unit is synchronized with the packaging-machine speed and gives 20 to 40 sq. ins. of imprints for 1¢.

Heat and pressure produce clear, sharp, permanent impressions in a wide range of colors on any material that will accept hot roll-leaf imprinting. **(T-5)**

L. F. Dommerich & Co., Inc.

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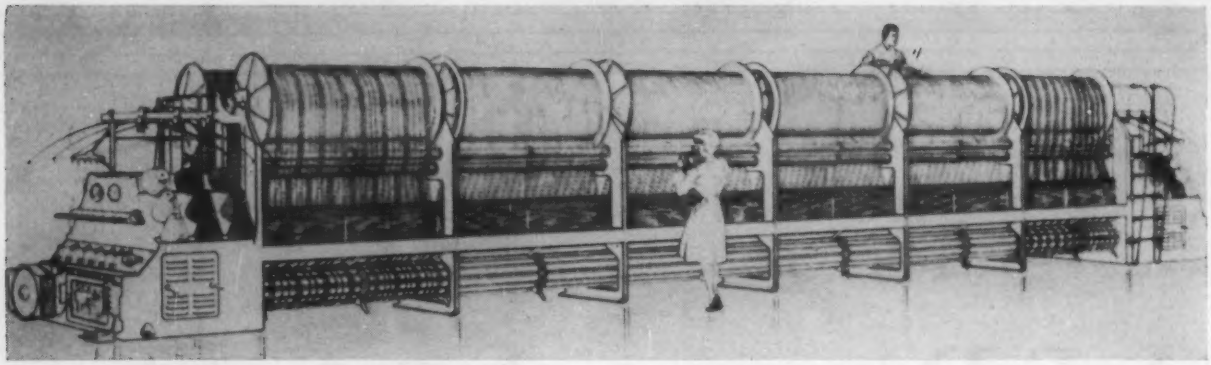


Weaving Machine

A weaving machine said to produce 24 rolls of cloth 39.37 ins. wide simultaneously in several colors of filling has been announced by Construcciones Mecanicas Cerdans, S. A., Barcelona, Spain.

Six warp beams are located in lengthwise rows over each side of the machine, and the warp ends are fed downward through a series of needles moved by grooved cam plates. The cam plates form the warp shed and are part of an endless conveyor that serves the warps on both sides of the machine. The needles and cam plates are in rows of two or more, depending on the cloth design.

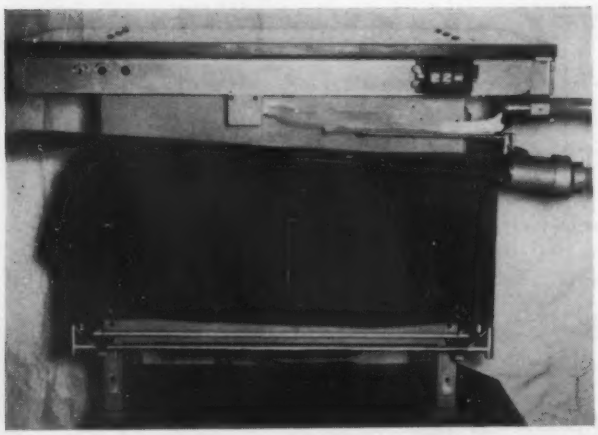
The filling is carried through the warp shed by a series of yarn carriers, each fitted with a disk bobbin of filling. The filling is taken from cones at each end of the machine, and each bobbin contains enough filling for the 12 pieces of cloth on each side of the loom.

Each filling carrier has a small ball-bearing roller. Moving sheets of steel strike the rollers and drive the filling carriers through the warp shed. Stationary sheet-steel tunnels located between the yarn needles guide the filling carriers through the warp shed.

When the carriers reach the end of the cloth on each side of the machine, the endless conveyor moves the carriers to the other side where a new bobbin is automatically picked up, and the cycle is completed.

With the filling in, beating-up action is performed by camplates on the endless conveyor. This action is irregular, and each section of warp has the filling beaten up in approximately 6-in. lengths.

Selvages are made at the edges of each piece of cloth by hooks that pull the ends of the filling yarn through the shed on the following course of filling. (T-6)



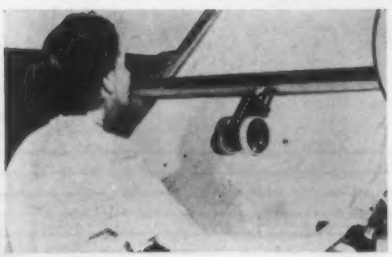
Automatic Hosiery-Inspecting Machine

Simplicity is one of the features of a pneumatic inspection machine built by Southern Textile Machinery Co., Paducah, Ky. The machine is designed primarily for the inspection and turning of women's seamless hosiery.

The machine runs from a regular 60-cycle, 110-v., single-phase supply and requires space of only 30x48 ins.

The stocking is pulled on the form, trimmed, and inspected. Suction on the inside of the form draws the stocking through the form and turns it ready for preboarding. Two fingers grip the toe of the stocking and lay the stockings in a tray or in a bag for the Dunn system.

The production from this machine is not as high as the production from the Sotco model. The price of the pneumatic machine is $1,300 f.o.b. Paducah. (T-7)

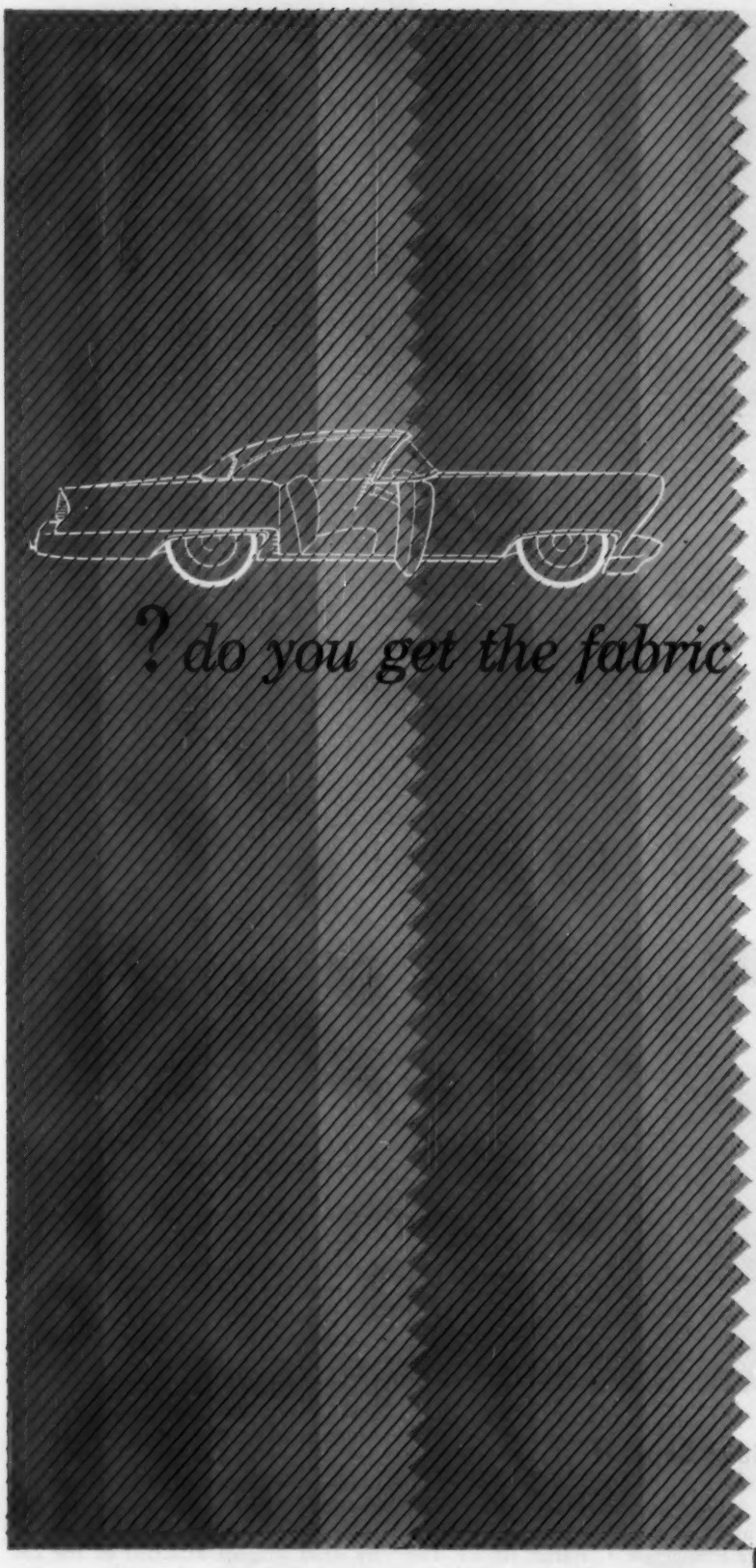


Selvage Marker

The Mark-Fix 3, a device that puts thread tags in selvages on the loom, the inspection table, or in the dyehouse, has been announced by Uster Corp., Charlotte 8, N. C.

The Mark-Fix 3 inserts colored thread loops to mark cloth for defects, mispicks, spots, streaks, and where marking is now done by hand sewing. One Southern mill uses Mark-Fix 3 to make shift marks.

Studies in another mill show, from labor savings alone, an annual investment return of over 300% when the marking device replaced hand tagging at the mill's cloth-inspection tables. (T-8)



? do you get the fabric **BLUES**

Picking a color for an automotive fabric is no easy matter. After it is chosen, you want every yard to measure up to the sample with no assembly line problems caused by off-color dyeing, streaks or shading.

The solution to the problem is Continuous Process Rayon. This is the yarn with a consistent record for dyeing evenly, to the same density of color, and without streaks. Yard after yard. Piece after piece. To be sure, fabric dyeing is the mill's business and that's why most mills specify Continuous Process Rayon when they're making "critical" fabrics.

You know that an unwelcome surprise, from piece to piece, or within a piece of an automotive fabric, can hold up an entire production line. It seems to us it would make good sense to insure continuity of color by making sure your fabrics are made with Continuous Process Rayon.

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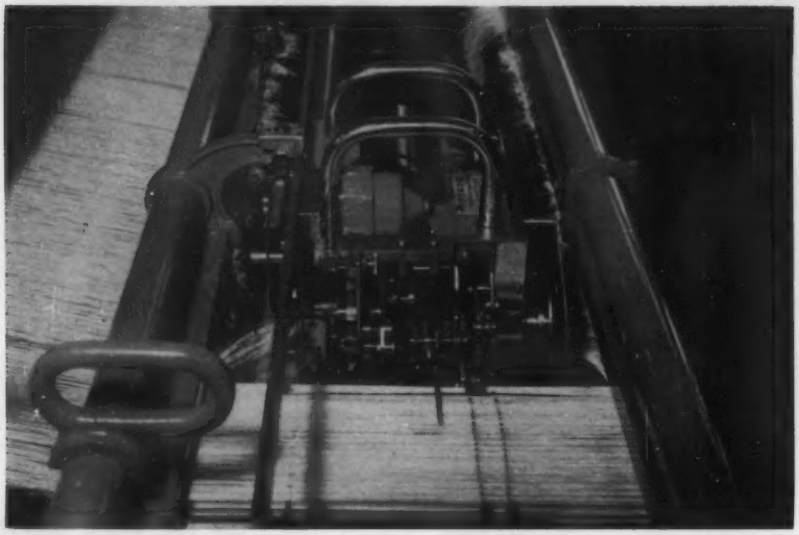


Warp-Tying Machine

A new patented model of the Poege warp-tying machine, made in Germany by Maschinenfabrik Oskar Fischer, is available in the U. S. from Stellite American Corp., 60 E. 42nd St., New York 17, N. Y. It is a universal machine adaptable for all kinds of warps except jute. Available widths: 44, 60, 76, and 93 ins. between beam flanges.

The machine can be used on or outside the loom; it needs 20 ins. of space behind the loom. Production: 250 knots per minute; 10 warps of 4,000 threads per day. On jacquard weaving, loom downtime for warp tying is 1¼ hrs. for dense warps. Fine threads can be tied to coarse threads.

Weight is about 30 lbs. **(T-9)**

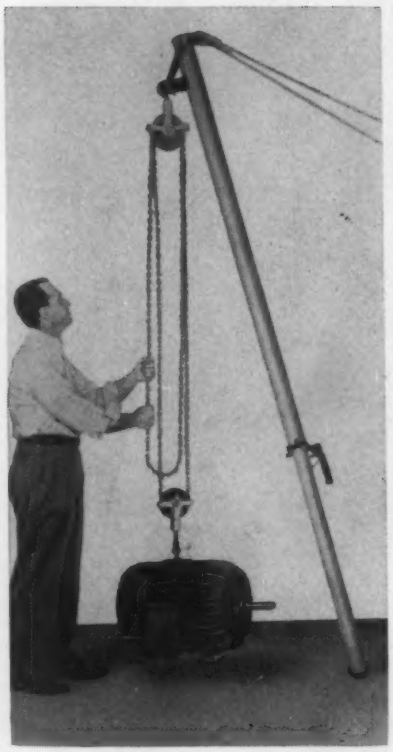
Sample Knitting Machine

A hand-knitting machine, designed by Max Lehner & Co. A. G., Granichen, Switzerland, has been introduced for making experimental fabric designs and samples. The machine is marketed in this country by Textile Products Div., Norca Machinery Corp., 350 Fifth Ave., New York, N. Y.

Weighing 12¼ lbs. and capable of producing 10,000 stitches per minute, the machine permits an average-skilled operator to produce a sweater in about 1 hr. or a complete dress in about 6 hrs. Garments produced by the Auto-Knit have a hand-knit finish.

All knitting yarns can be handled.

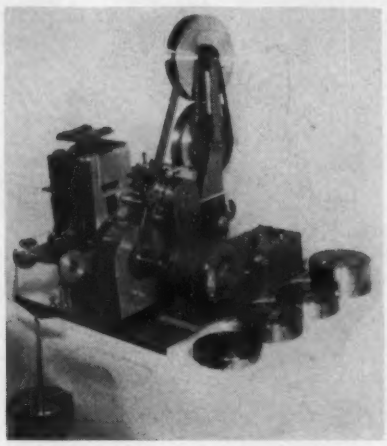
An automatic yarn guide feeds the thread to the 161 needles, which are activated by a specially designed traveling carriage. The carriage automatically regulates needle operation in four distinct positions, and a number of stitches can be produced. **(T-10)**



Hoist Support

A hoist support called a Magic-Pole Unipod is available from B. E. Wallace Products Co., Exton 10, Pa. The standard model supports 2,000 lbs. and weighs 22 lbs.

It can be extended to 10 ft., 2 ins. in 6-in. steps and closed to 6 ft., 4½ ins. for storage. The hoist is kept clear by a built-in outrigger. Price: $31.90. **(T-11)**



Abrasion Tester

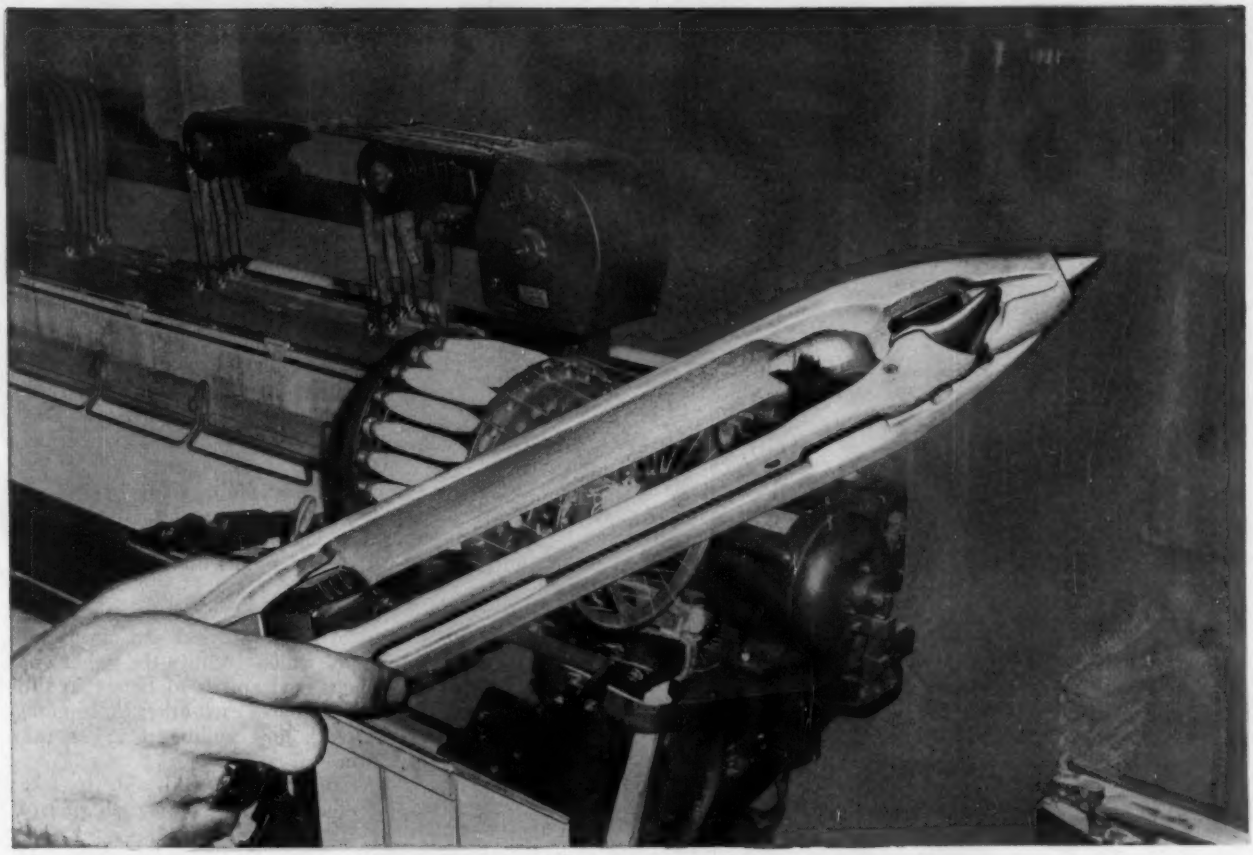
The CST-A abrader, which determines the resistance to abrasion in terms of volume loss, is available from Custom Scientific Instruments, Inc., Arlington, N. J.

Essentially, the machine consists of two independent units: (1) a vertical track to carry the prepared specimens, and (2) a carriage that rests on roller bearings and keeps a strip of abradant in continuous motion.

The directions of motion of the abradant and samples are opposite to each other, and contact is maintained by dead weights attached to the carriage by a cable-spring-pulley arrangement.

Capacity: six to eight test specimens, depending on the number of calibration zinc specimens.

The size of the sample tested is ⅞x2¼ ins. **(T-12)**



There is a difference between shuttles . . .

. . . and that difference lies in the engineering. A shuttle may meet the highest standards for materials and workmanship, but to be the right shuttle, it must be engineered by men who have a thorough knowledge of your looms.

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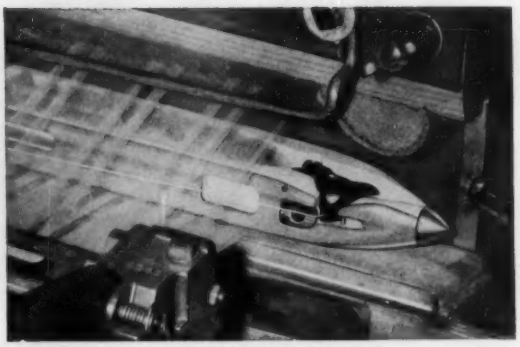
Draper shuttles are correct in size and construction — tailor made to fit your needs.

When you order Draper shuttles you not only get the *best*, but the *right shuttles.*



Strobolite photograph of Draper True Flight shuttle in action.

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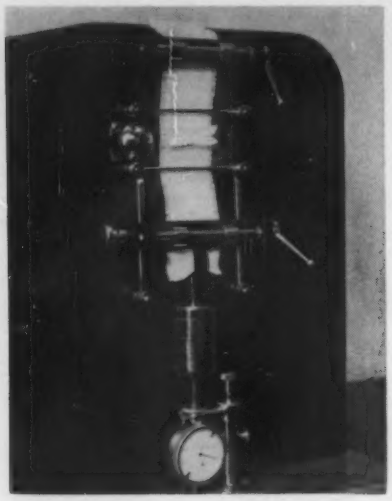


Seam-Slippage Tester

A tester for the control of seam slippage is available from Stellite American Corp., 60 E. 42nd St., New York 17, N. Y. Two grabs hold the cloth; and the seam is subjected to traction, pressure, friction, and movement to indicate wear performance.

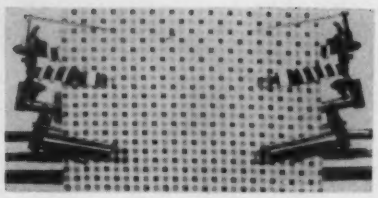
Thread slippage is measured to 0.01 mm. Two tests are made: the seam is tested after the fabric is first tested for natural elongation. Slippage is given as a difference between the two elongations. Price: $580 plus duty and transportation from Italy. **(T-13)**

All-Purpose Welder

A universal arc welder with a.c. and optional d.c. welding currents provides a welding arc for all-purpose manual welding jobs. A soft or a forceful arc can be selected.

For any welding job, there is one type of arc that is best suited for the job. The job can best be done by either a.c. or d.c. and with either a soft arc or a digging, forceful arc. The job can be done with any one of the several combinations; but there is, nevertheless, one combination that is best.

Made by Lincoln Electric Co., Cleveland 17, Ohio, the Idealarc machine is available in 300-, 400-, and 500-amp. a. c. models with d. c. capacities in 200, 300, 375, and 450 amps. Iron-powder electrodes can be used to advantage. **(T-14)**



Selvage Uncurlers

Improvements have been made in the selvage uncurlers manufactured by Guider, Roll & Service Co., Daytona Beach, Fla. As originally designed, the machine had to be installed at the angle of the cloth guider.

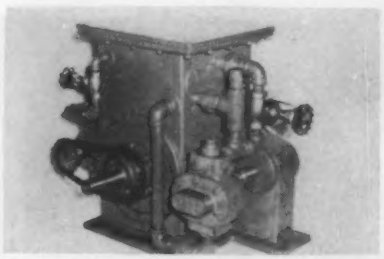
On the new models, the Taker-Outers have flexible knuckles for adjusting the spirals of the machine to the best angle.

Another improvement is the addition of a screw-thread and clover-leaf handle, which permits the rubber or stainless-steel spirals to be set in the best relation to each other for nipping the cloth and pulling it to its full width.

A spiral fits on each side to take out doubled selvages on each side of the fabric in process.

The nip adjustment can be made while the machine is in operation, and the spiral can be accurately set.

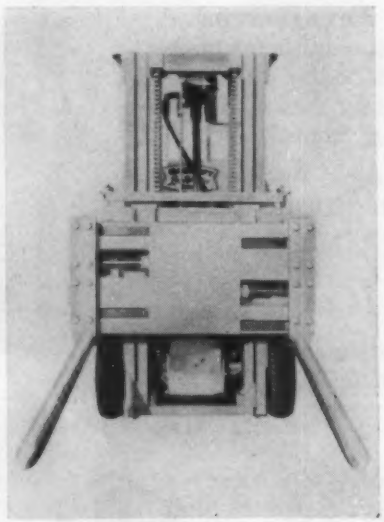
The improvements are available in cloth- and motor-operated Taker-Outers. **(T-15)**



Constant-Tension Winder

The Temco hydraulic winder, made by Temco Winders, Inc., Providence, R. I., will wind material of any thickness, width, weight, or type of material at a wide range of linear speeds, tensions, and roll build-ups.

The winders are easy to install: align the winder with the process machine and connect it to the power supply, and it is ready to wind. Once the desired tension has been set on the dial, no further attention is required from the operator regardless of the number of rolls wound. **(T-16)**



Fork Attachment For Cloth Rolls

A new kind of squeeze-clamp attachment for fork lift trucks has been announced by Lamson Mobilift Corp., Portland, Ore.

The attachment is similar to a standard squeeze clamp; but it has special round forks. The forks are 33 ins. long and egg-shaped on the ends. The forks operate between 18 and 55 ins. between the clamps.

The special attachment was designed to handle rolls of textile materials that are stacked flat in a trailer or warehouse.

Since the rolls are usually wrapped in burlap covering, which is easily snagged, the squeeze part of the clamp is seldom used to pick up the material.

Instead, it is generally used to adjust the forks to the size of the roll being picked up.

So the roll is actually cradled between the round forks when it is transported.

The round forks can be used to pick up square bales or rolls by the squeeze method.

They can also be used as regular forks to handle pallets. **(T-17)**

CONTINUED ON PAGE 216

NOW– NEMA Type XII

THE ONLY SAFETY SWITCH IN SPECIAL INDUSTRY ENCLOSURE!

CAPTIVE SCREWS assure tight cover fit

EXTERNAL MOUNTING FEET eliminate need for conventional leaky mounting holes within the enclosure

NEOPRENE GASKET provides positive cover seal

WELDED TIGHT ENCLOSURE without knockouts excludes dirt, dust, oil, and splashing coolant

This new heavy duty switch, built to NEMA XII specifications, is "tailor-made" for applications requiring the exclusion of dirt, dust, oil and coolant.

The rugged, visible-blade switch mechanism within the special industry enclosure has all the performance features that have made Square D an overwhelming "first choice" for fifty years.

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NEW DYES and CHEMICALS

Diazonium Salt

National Blue 3BVS Salt . . . will produce a range of shades from greenish to reddish blues when coupled with various naphthols. Useful on cotton or rayon, it can be applied in continuous range, pressure machines, or open tubs, as well as by printing processes. It is dischargeable; and dyeings with it have excellent fastness to light, washing, soda boil, and other processing.

The diazonium salt is recommended for work and play clothes and for materials that are to be resin-finished. National Aniline Div., Allied Chemical & Dye Corp., New York 6, N. Y. **(D-1)**

Rubber-Grade Styrene Monomer

A synthetic-rubber-grade styrene monomer previously available only to government synthetic-rubber plants is now available to industrial users.

Contains a minimum of 99% styrene and not more than 0.02% sulfur. Price is 18¢ per lb. Koppers Co., Pittsburgh 19, Pa. **(D-2)**

PVA Emulsion

Harto-Resin PC . . . a polyvinyl-acetate emulsion that gives durable finishes without curing. The films are clear and colorless and give stiff finishes recommended for ribbons, cotton and rayon fabrics, and nylon hosiery. Hart Products Corp., New York 18, N. Y. **(D-3)**

Synthetic Detergent

Monamine Add-100 . . . an alkylolamide detergent said to be practically odorless. Mona Industries, Inc., Patterson 4, N. J. **(D-4)**

Nylon Finish

R-300 . . . a finish used to impart crispness to nylon hosiery. Reduces after-odor; gives improved durability, better hand. Jersey State Chemical Co., 59 Lee Ave., Haledon, N. J. **(D-5)**

Here's the CHEMISTRY of X-2

The basic chemicals used in Dan River's crease-resistant finish are acrolein and formaldehyde.

Acrolein is an extremely reactive unsaturated aldehyde that tends to autopolymerize. For this reason, the product is supplied with an inhibitor, hydroquinone. Just prior to formulation, the acrolein is distilled off at 52° C. to provide a monomeric aldehyde of uniform reactivity.

The reaction proceeds under the mildest basic conditions. Dan River uses 1% sodium carbonate as a catalyst to produce a product suitable for textile finishing. The ratio of 1 mol of acrolein to 4 mols of formaldehyde appears to offer a good compromise of effectiveness, cost, and suitability for large-scale manufacture.

The reaction is highly exothermic and requires an efficient cooling system. In addition, the sequence of addition of ingredients is important in controlling the heat of reaction. After the condensation is complete, the product is neutralized with a suitable mineral acid and is then ready for use.

Modification Is Possible

Variations on the basic product include the addition of small to moderate amounts of starches and gums. The optimum procedure is to dissolve the starch or gum in part of the formaldehyde and then react in the presence of the catalyst with the balance of the formaldehyde and freshly distilled acrolein.

Such modified products have been of special value in treating viscose rayon. The effect of the additives on the basic reaction is not precisely known, but the reactive properties of the acrolein-formaldehyde product are retained.

The indications are that a higher molecular weight is obtained, which gives beneficial results on rayon.

From paper presented at the AATCC, Piedmont Section, by Dr. Paul B. Stam, Asst. Dir. of Research, Dan River Mills, Va.

The reaction product of acrolein and formaldehyde is water-soluble but not thermosetting. It derives its usefulness in finishing from its cross-linking reactions, which is evident in the changes that occur in the fibers when it is applied. Fibre swelling, reduced moisture absorption, lower elongation, and less elasticity are side effects.

Acid Catalyst Is Used

The reaction with cellulose appears to be conventional methylol groups of the reactant with hydroxyl groups of the cellulose, catalyzed by acid-forming substances. Dan River finds that magnesium chloride or calcium chloride are most suitable as catalysts from the standpoint of cross-linking and acid hydrolysis of the cellulose chains. Time and temperature of curing are chosen on the same basis.

The use of extremely mild catalysts requires that the fabric be absolutely free of alkali before finishing. In rayon stabilization work, it may be preferable to use enough of a stronger catalyst such as sodium bisulfate to insure proper stabilization. The accompanying variation and degradation have to be accepted.

The amount of acrolein-formaldehyde condensation product effective for stabilization purposes is from 3 to 20%, the higher concentration giving better fabric physical properties.

X-2 is said to be the first commercially practical crease-resistant finish that can be guaranteed to be nonchlorine retentive. Its two deficiencies appear to be that it has no dye-fixative properties and although it gives crease resistance as measured by conventional methods, the fabrics lack the bounce and spring desired by shirt and slacks manufacturers.

These deficiencies can be overcome by adding suitable thermosetting resins to the formula. Customer requirements as to colorfastness, chlorine retention, and permanence would have to be considered in such cases.

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- DRUSIL improves abrasion resistance and sewability, without affecting fabrics' tear strength.
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THIS IS NO. 109 OF A SERIES ON

GETTING THE MOST FROM WINDING

Information about winding designed to show improvements in winding equipment and new ideas in the winding operation

HOW TO WIND WITH VERY LIGHT TENSION ON THE LEESONA NO. 50 WINDING MACHINE

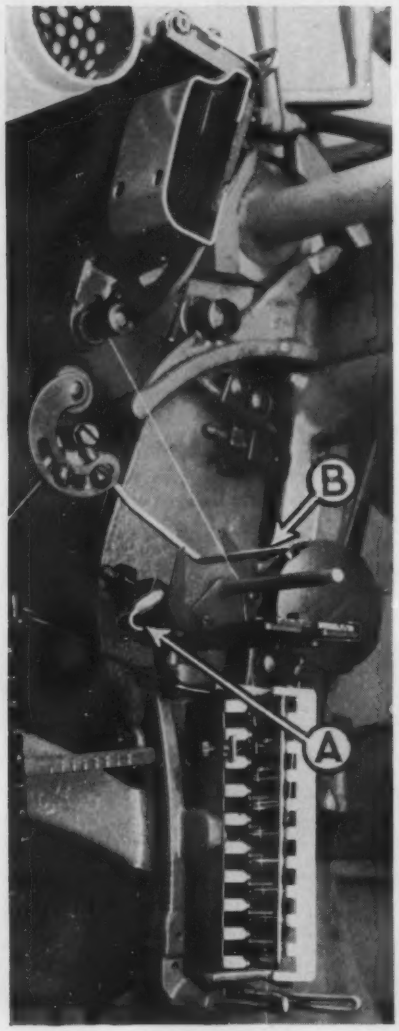

Fig. 1. Magnetic Helper (A) and Breakage Lever (B).

In a recent issue of *Getting the Most from Winding*, we described a vertical tension lever that provides a very precise control when winding with very light tension. When applied tension must be held in the vicinity of 1 to 2 grams, not only is precise control needed but also a means of eliminating any unnecessary or uncontrolled drag that might result from points of yarn contact other than in the tension itself. For example, the weight of a breakage lever could be sufficient to prevent a tension as low as 1 gram from being obtained.

A very simple device that can be used on the No. 50 machine, as an adjunct to the vertical tension control, makes it possible to get tensions as low as 1 to 1½ grams. The device is a Magnetic Helper (shown at A in Fig. 1 and enlarged in Fig. 2). It allows the breakage lever (B in Fig. 1) to be balanced so that it will place practically no tension or drag on the yarn and still operate efficiently.

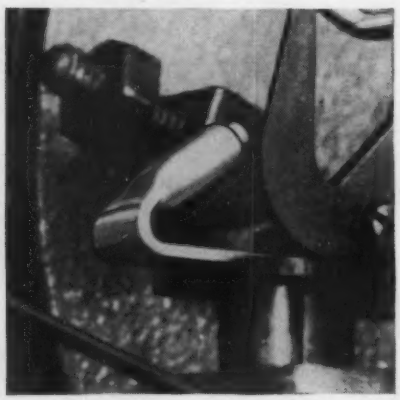

Fig. 2. Close-up of the Magnetic Helper.

Ordinarily the stopping mechanism must be adjusted so that the breakage lever will arc downward when the yarn which passes under it breaks. The breakage lever must move quickly and far enough to bring the stopping lever into contact with the stopping wheel and stop the spindle. If the breakage lever is balanced so it places little or no tension on the yarn, it may not operate quickly enough or at all; the result is scrambled yarn.

When the helper is used, the breakage lever can be adjusted for minimum drag on the yarn so that it barely moves downward after the yarn breaks. In a short distance it comes within the magnetic range of the helper which draws it the rest of the way to stop the spindle quickly.

This arrangement is particularly well suited for winding dye packages of synthetic filament yarn, since it makes it much easier to wind these packages to the desired low density.

March, 1955 — 23.4.19A

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QUESTIONS and ANSWERS

▶TEXTILE WORLD'S editors are at your service to help solve your problems in yarn manufacture, weaving, knitting, dyeing, finishing, or other textile operations. If you have a technical problem bothering you, send it along to the Editor, Questions and Answers, TEXTILE WORLD, 201 E. Coffee St., Greenville, S. C.

Cotton-Fiber Fineness Limits Set Wide Apart

Technical Editor:

What are the practical limit values for Micronaire considered by mill men in purchasing cotton?

Are there tests for standard Micronaire values for cottons grown out of the U. S., and how do these varieties compare with American Upland? (9850)

Some mills have set maximum and minimum fineness limits. The extremes in fineness and coarseness cause trouble in processing, and the mills eliminate the very-fine and the very-coarse fibered bales.

These limits are set as wide apart as permissible to avoid increased cotton prices due to increased selectivity. These limits would be governed by the type of goods made and the yarn numbers required for the end product. A finer yarn might require a finer fiber to meet the yarn-strength requirements.

Egyptian types of cotton would generally run longer and finer than American Upland cotton. We know of no established standard for foreign cotton. Mills using these high-priced cottons take advantage of this finer and longer cotton for greater yarn strength and better appearance. As most of this Egyptian cotton is combed, neps in the yarn would be greatly reduced.

Six General Rules For Evenness Testing

Technical Editor:

Could you give me any general points to watch for in evenness testing without going into detail about any specific instrument? (9863)

Here are your general points to watch, but remember they don't all apply to every instrument.

1. The precision with which the average uniformity of a large number of bobbins can be determined depends for the most part on the sampling technique. Recommended manufacturer's sample lengths vary from 39 to 1,000 ft., but the number of bobbins to be tested is not usually recommended.

In one test, 10 bobbins of 31s carded cotton yarns were tested on the various testers using the manufacturer's recommended sample lengths, and the coefficient of variation of the results varied from 0.8 to 3.5%. These figures are not indications of comparative accuracy of the instruments; they tend to show how the sample length used affects the precision of the results. Developing your own sample lengths to obtain the precision needed is a good idea.

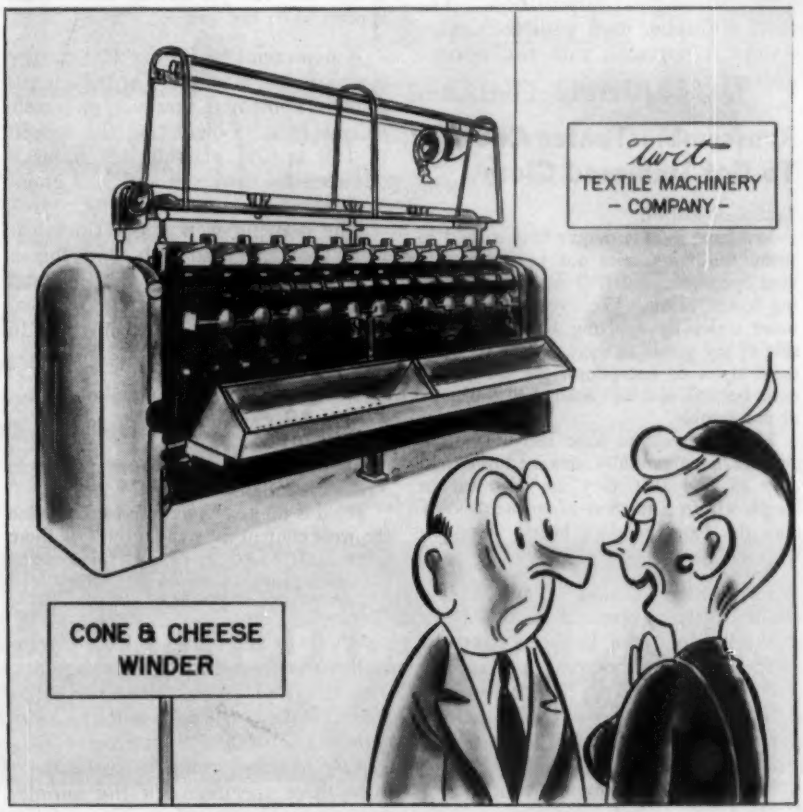
2. A sampling plan followed with success by several mills:

Yarn:	1,000 ft.; 12 bobbins
Roving:	500 ft.; 6 to 8 bobbins
Sliver:	250 ft.; 4 to 5 cans

Take the samples from different machines to get interbobbin, interframe, and interdoff calculations. The variation of the average is ±2% at the 95% confidence level.

3. It's practically impossible to center the zero line in the middle of the chart. Displacement above the center results in an increased amplitude, and a displacement below the center results in a decreased amplitude. A correction factor must be developed from the average readings taken. Correction

TEXTILE TICKLES . . . . . *By Edgar Allen, Jr.*



"Do you have any samples? . . . I love cheese!"

factors are usually supplied for integrators. Magnification values should be checked to make sure they're correct.

4. Some testers are affected by temperature conditions. If a tester is affected, make sure tests are run under controlled temperature as well as humidity conditions.

5. The warm-up time varies for the available instruments. Two good ideas: (1) let the instrument warm up for an hour to stabilize drift, and (2) leave the instrument on all the time except during shut-down periods.

6. In testing roving on a capacitance-type tester, watch out for the head loading up with lint.

Cotton Twist Multiplier Doesn't Work on Wool

Technical Editor:

What is the best way to duplicate a cotton yarn on the worsted system? (9864)

The best way would be to test the cotton yarn for yarn number and twist per inch and just duplicate it. You would probably need less twist in the worsted yarn because of the larger diameter and longer length of wool.

Constants are of no value with wool because the diameters and lengths of wool fibers vary so much more than cotton; and for that reason, mathematical computations to convert cotton data to worsted data would not give meaningful information. The twist multiplier used with the cotton system is not used with the worsted system.

Reassemble Tenter Chain To Get Unbiased Cloth

Technical Editor:

We have a 60-ft. tenter that is used to steam finished fabrics out to width as a final operation. Lately it has been delivering biased fabric. We overcome this on some styles by applying tension to one side of the goods at the entering end; but some styles do not permit the use of the extra tension, and we cannot find the cause of our trouble.

The tenter chains have 366 links each, and we have carefully measured the rails only to find that they are identical in length within a fraction of an inch. Why does the frame produce biased filling—always in one direction? (9865)

Somewhere along the line, one chain has worn more than the other at the linkage point between clips. In 60 ft. of chain, an increment of a small fraction of an inch per link can add up to 3 or 4 ins. of bias as the chain carries the cloth from one end to the other.

Tenter chains are driven by a toothed wheel that engages the spaces provided in the chain links. This is generally a rather loose fit, and it takes considerable wear at the link joints before any possibility of jumping or binding could be looked for.

The worn chain tends to lag behind, and the cumulative effect of the link-joint wear results in the cloth coming off at a bias.

The cure is to dismantle both chains completely. Disjoint the chains into lengths of five or six links; be sure to keep each chain separate from the other.

Now reassemble the chain, putting on each rail, alternately, a length of worn chain and a length of normal chain. In this way you will mix the two chains on both rails, and the normal and worn sections will more or less neutralize each other. The frame should then deliver unbiased cloth.

Compare Nep Counts On Web-Weight Basis

Technical Editor:

We have studied the article on cards and nep control in TW May, '52, and find it very enlightening; but our nep trouble appears to be due to drawing and not carding.

We card at 11.5 lbs. per hour, and our nep count is 20.5 per 100 sq. ins. We make a 63-grain sliver and the web width is 90 cms. The drawing is 65-grain sliver with a web width of 14 cms., and the nep count is 136 per 100 sq. ins. of web. What appears to be the trouble? (9857)

A nep count of 20 per 100 sq. ins. is classified as average. The nep counts must be compared, however, on a web-weight basis. Calculating the weight of 100 sq. ins. of web, 4.9 grains is obtained for card web and 32.8 grains is obtained for drawing web.

The drawing web is 6.7 times the weight of the card web, and this is exactly the ratio of the drawing and carding nep counts. On the basis of these figures, there is no increase in neps due to drawing.

How To Analyze Wool Battings

Technical Editor:

What is the test procedure to determine the wool content in wool batting? Is there a standard procedure, or is it the same as for determining the wool percentage in a fabric? (9758)

Wool battings and felts are generally analyzed for all constituents, whereas wool fabrics are more often analyzed for the wool content. Here is the alkali method of analysis:

Take about 5 grams of the batting from three specimens of the sample, and cut them into pieces about $\frac{1}{8}$ in. Dry the sample, and record the weight *B*. Extract the sample with carbon tetrachloride in a soxhlet apparatus for four hours. Evaporate the carbon tetrachloride from the extract, and dry the residue. Record this matter that is soluble in carbon tetrachloride as a percentage of the specimen *B*.

Determine water-soluble matter by taking the specimen from the carbon tetrachloride extraction and drying it. Cover the sample with distilled water and boil for 15 mins. Decant the solution through a filter into a weighed evaporating dish. Repeat this boiling four times. Evaporate the total filtrate and dry the residue. This residue is water-soluble matter and is recorded as a percentage of the original specimen *B*.

To determine the wool content, dry the specimen and record the weight *C*. Place the residue in an Erlenmeyer flask, and cover with 105 to 150 milliliters of a 5% sodium-hydroxide solution. Attach a reflux condenser, and boil the solution for 20 mins. Collect the undissolved fibers in a Gooch filter or a 100-mesh wire screen, and wash with distilled water until neutral to litmus. Dry the residue, and record the weight as *D*. Calculate the wool content as a percentage of the weight of the original oven-dried sample.

$$\text{Percentage dry wool} = \frac{100}{B} \times \frac{(C-D)}{.95}$$

Dry the samples at 221 to 230° F.

Follow Dry Cans With Mangle To Reduce Bow

Technical Editor:

The filling in our cotton fabrics is bowed as we pass the fabrics through a mangle, tenter, and drying range. The center of the cloth lags behind the selvages. How can we avoid this bowed condition? (9853)

Unbalance in the fabric construction will cause the filling to be bowed because the tenter frame transports the cloth by the selvage. If your drying range consists of a stack of drying cans, which is preceded by a tenter, any tightness in your selvages will be accentuated. The filling will lag behind in the center if the fabric goes through the tenter first.

Follow the mangle with the dry cans to minimize the bowed effect because the tension occurs at the selvage and the center of the fabric tends to shrink.

Running the fabric on the tenter in a nearly dry condition will complete the drying and bring the cloth to the desired width with little bow.

If the selvage construction is unbalanced, redesign it so the selvage and the body are nearly alike.

LESS THAN 1¢ PER SPINDLE

for replacement parts and repairs

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A large southern mill has *49,394* Marquette Roller Bearing Spindles in operation, some of which were purchased as far back as *1946*.

To date they have spent only *$441.84* for repairs—an average of $.009 per spindle!

Many other mills have had the same money-saving experience with Marquette Spindles. They have learned that these spindles not only give *better performance* at *higher speeds*, but also save on power, lubrication, tapes and general maintenance.

We'll be glad to arrange for a test installation in *your* mill to prove that you too can increase your production and reduce your costs by using Marquette Spindles.

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...that's when this absolutely LEVEL DYEING "pays off"!

An exclusive method of cushioning the shock of flow reversal . . . plus our own pump design to obtain high flow at moderate pressure . . . reduce danger of "blown" beams.

Quality in denim, chambray, gingham and similar fabrics, depends greatly upon *uniform color*. This can be achieved only with *yarn* of uniform color . . . yarn without the slightest variation in shade. The Smith-Drum Beam and Package Dyeing Machine is designed to *insure absolutely level dyeing* of a complete set of beams or packages.

Level dyeing is possible *only* when all beams or packages in the same lot are dyed simultaneously in the *same bath!* This Smith-Drum Machine dyes from 2 to 6 beams or yarn carriers under identical conditions of liquor ratio, flow, pressure and temperature . . . with uniform distribution of additions to the dye bath.

If you are interested in truly uniform dyeing results, economy in operation and saving in floor space, it will pay you to discuss this machine with one of our representatives.

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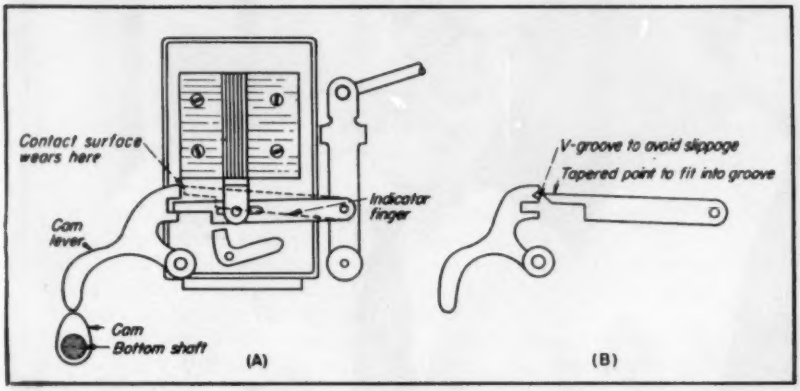
KINKS and SHORT-CUTS

How To Prevent Warp Stop-Motion Failures



SURE STOPS result when the contact surface of the cam lever is filed to form a V. Then the tapered indicator finger fits into the V to prevent slippage.

On our Crompton & Knowles looms running 4x4 shuttle boxes, we use the warp stop motion to stop the looms at broken warp ends and also to stop the looms when the feeler indicates that the filling in the shuttles is nearly exhausted. The feeler is connected to the knock-off motion.

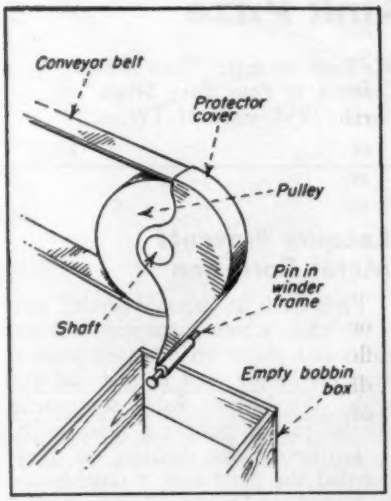
On some looms, the loom did not stop quickly enough when the feeler indicated a stop; consequently, the filling ran completely out of the shuttles and the loom had to be stopped by the filling stop motion. This error caused our weavers a lot of extra work.

We decided that the indicator finger in the knock-off case slipped off the cam lever occasionally and prevented the warp stop motion from operating. The contact surfaces of these two parts wear smooth after long service, as illustrated in Sketch A.

To eliminate this trouble, we filed a V-shaped groove in the contact surface of the cam lever and tapered the end of the indicator finger to a point. See Sketch B.

Now the stop motion works every time the feeler indicates a stop. *George Lischer, Allentown, Pa.*

Conveyor Cover Protects Winder From Tail-Ends



PROTECTOR on winding-machine conveyor belt prevents loose tail ends of yarn fouling up the pulley and shaft.

When the yarn has been wound from spinning bobbins on our Roto-coner winders, the bobbins drop on a conveyor belt, which delivers them to the bobbin box at the end of the machine.

Many of the bobbins carry along with them long yarn ends that often contact the small pulley that supports the conveyor belt. If these ends are not cleaned out frequently when they wrap around the pulley, they form a hard mass and cause an extra strain on the conveyor drive.

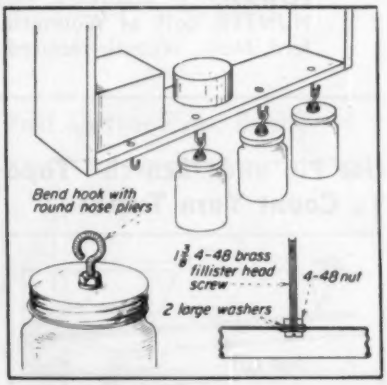
This increased strain is carried through to the head-stock helical gears and prevents the proper action of the mechanism that governs the relative drum and traverse speeds to avoid ribbon formation in winding.

We designed a tail-end protector to prevent tail ends wrapping around revolving parts of the conveyor. We made the protector cover from sheet metal.

Two holes are drilled in the cover so that it can be suspended from the conveyor pulley shaft. The cover is shaped to sweep the tail ends into the bobbin box. The bottom of the cover is supported by a pin that rests in the hole drilled in the frame.

This cover has saved us cleaning time and eliminated the trouble caused by yarn winding around the pulley. *V. V. Rajwade, Bhavnaga, India*

Small Parts Containers

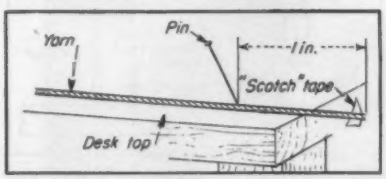


A SAFE WAY TO KEEP SMALL PARTS readily available is illustrated by the sketches. Screw-top glass jars are adapted to the purpose by punching a No. 30 hole in the center of the top. The hooks shown are made from 1⅜-in. fillister-head screws. They are placed in the holes in the tops and secured with suitable nuts and washers and bent with pliers into hooks. The jars can be hung in any spot convenient to the work. *Chas. H. Willey, Penacook, N. H.*

Winners of TW's 1954 $500 Kink Prize

EDWARD S. RUDNICK (left) and STUART HUNTER, both of Wamsutta Mills, New Bedford, Mass., recently received $500 as the 1954 annual prize in TW's Kink contest. Their Kink, "Get Warp-Size Content in Four Easy Steps," appeared in the March, 1954, issue of TW.

Use Pin and "Scotch" Tape To Count Yarn Twist



A PIN and "Scotch" tape can be used to measure the twist in yarns too short for a twist counter. The pointed piece of "Scotch" tape at one end of the yarn is free to revolve and indicates the amount of twist in the yarn.

Often in analyzing a fragment of tape, ribbon, or cloth, we do not have a piece of yarn long enough for a regular twist counter. To measure twist in yarns only 1 to 2 ins. long, we have developed the following method:

Paste a piece of "Scotch" tape, pointed at one end, on the end of the yarn. Stick a pin into the yarn 1 in. from the "Scotch" tape. If the yarn is less than 1 in., stick the pin ½ in. from the tape. Push the pin toward the tape and count the revolutions of the tape point until the pin reaches the tape. The tape revolutions will equal the number of turns per inch or half inch.

When you push the pin toward the tape, secure the fixed end of the yarn on a flat surface and keep the taped end extended over the edge to revolve freely. *R. Bleiler, Allentown, Pa.*

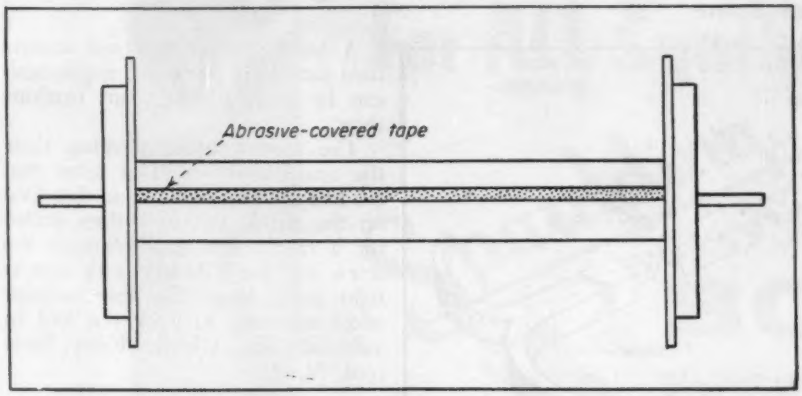
Lacquer Prevents Metal Corrosion

Parts such as exposed shafts, pulleys, card screens, trumpets, flyers, rails, and plates on our yarn-preparation machinery used to rust and tarnish. We had to assign someone a regular job of polishing these parts.

To prevent this damage, we spray-painted the parts with a durable lacquer such as Duco or Taigon to seal the metal from exposure to atmospheric conditions. The polishing job has been eliminated because the parts are easily kept clean by the carders and spinners.

Parts of one card covered with lacquer for almost four years still retain the finish.

Fasten Yarn to Loom Beams This Fast, Easy Way



ABRASIVE-COVERED TAPE with an adhesive back is stuck to the loom beam lengthwise. The tape holds the warp yarns firmly after only one wrap of yarn.

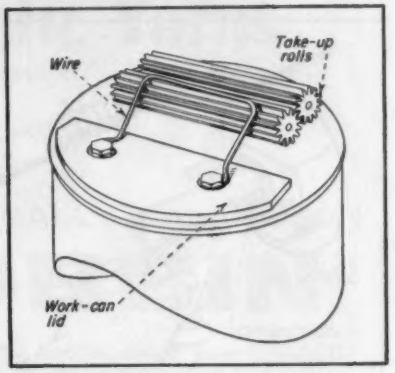
Yarn slipping on loom beams at the loom near the end of a warp used to give us a lot of trouble in weaving. We used tuck sticks in the loom-beam barrel to stop the slippage; but the sticks were expensive, and it took time to put them in when the new beam was started at the slasher.

We now use a 1-in. strip of an abrasive-covered tape to hold the warp yarn to our loom beams. The tape comes in rolls and has an adhesive substance on the back covered with a thinner protective tape. The tape is commonly used to prevent skidding on concrete ramps. We cut a length of the tape the full length of the loom-beam barrel, pull off the protective tape from the back, and stick the abrasive tape to the beam barrel lengthwise.

When yarn is started on a new beam at the slasher, the yarn is given a turn around the barrel enough to cover the tape twice. Then the slasher is all set to run.

The tape holds the yarn firmly at the loom down to the last turn of yarn on the beam. The tape is cheap and can be used for several warps before it has to be replaced. *A. T. Voight, Columbus, Ga.*

How To Beat Static In Helanca Socks



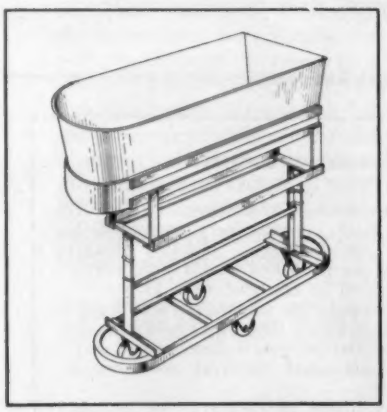
BENT WIRE on Komet work can prevents Helanca socks jumping out of the can.

When Helanca yarn was knitted on Komet machines, static developed in the socks that dropped in the can. This static caused the socks to jump out of the can and wind around the take-up rollers, which in turn, caused the take-up to stop working. If the trouble was not spotted, trouble soon occurred at the needles.

A piece of $\frac{1}{8}$-in. wire bent to a U-shape and fixed to the top of the work can controls the socks and prevents them getting caught in the rollers. The wire is attached by two screws in $\frac{1}{4}$-in. holes drilled and tapped on the work-can lid. The wire is bent so that it is positioned close to the outer edge of the take-up rolls.

[*Several mills have overcome the static problem in Helanca socks by applying an antistatic compound to the yarn during winding or by running the yarn over an oil jar filled with an antistatic compound.*—EDITOR]

Make Batteryhands' Baskets Last Twice as Long



EXTENDING the height of the buggy 2 ins. raises the top edge of the basket so that it cannot be damaged under the protruding temple.

For several years, our batteryhands' filling carts had to be replaced about every 12 months. We use standard baskets and the usual buggies.

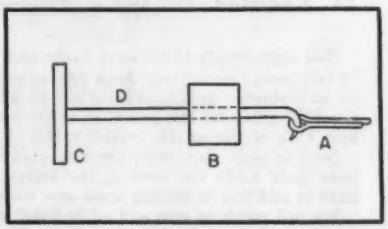
The rolled top rim of the baskets became battered and broken from being pushed under the loom temples where the temples protrude past the breastbeam into the weavers' alleys. As a batteryhand pushed the buggy along, the edge of the basket went under the temple and the rim was damaged. The rim was also damaged when the basket was pulled out from under the temple or struck the temple in passing.

We had several small accidents because batteryhands sometimes cut their fingers or hands on the snagged metal of the baskets.

Eighteen months ago we had our machine-shop employees change our buggies so that the basket rims would not be damaged. The shop men cut the upright stands of the buggies and welded in a 2-in. segment to make the buggies taller. This extension raised the carrying position of the basket 2 ins., and now the basket rim can't get under the temples.

After 18 months, the baskets are all in good condition. Figuring conservatively, we think this small amount of shop work doubled the life of our filling baskets. And we have definitely eliminated the danger of injuries. *L. M. Woodward, Eastman, Ga.*

Pull Cotter Pins Easily

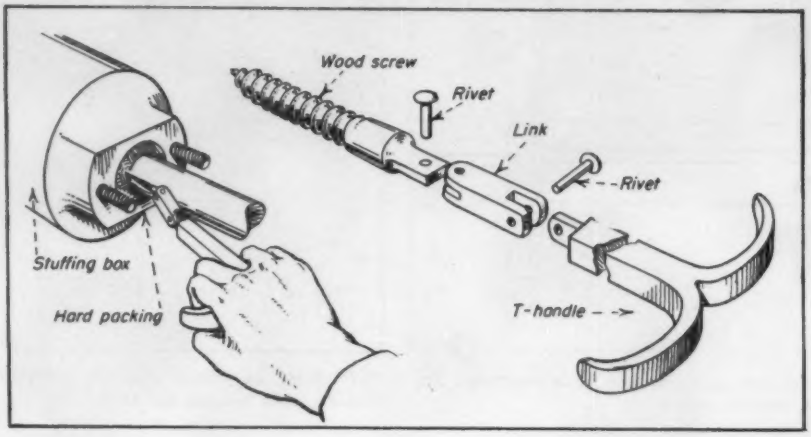


A COTTER-PIN TOOL that will work well in close quarters is shown in the sketch. *A* is the cotter pin, *B* is a weight that is free to slide on *D*, which is a steel bar shaped to hook into the eye of the cotter pin. *C* is a back plate welded to the rod.

To use the tool, hook the rod into the cotter pin and slide the weight as rapidly as possible against the back plate. The resulting jar will loosen the stubborn pins. *W. E. Warner, Essex, England.*

KINKS AND SHORT-CUTS

Packing Puller Has Universal Joint

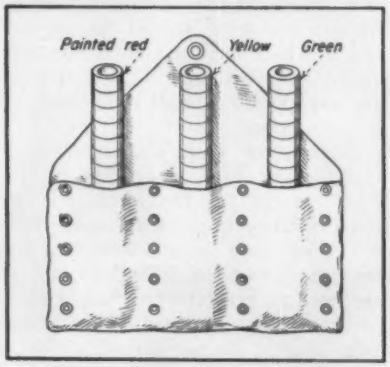


THIS PACKING PULLER will come in handy when old packing has to be removed from a stuffing box.

A handy gadget that will remove hard packing in pump and engine seals can be made in the plant machine shop.

The accompanying sketches show the components—a wood screw that has had the head cut off and flats filed on the shank, which is then drilled for a rivet. The link connects the screw and the T-handle with axes at right angles to get the universal-joint effect necessary to work the tool in awkward places. *Charles Willey, Penacook, N. H.*

Colored Bobbins in Pouch Save Doffers' Time



POUCH holds three colored bobbins used to signal the doffer.

This pouch can be a big timesaver for doffers, spooler hands, and fixers when it is attached to the outside of the bobbin bed. One pouch can be attached to each side of the frame. Varicolored bobbins in the pouch indicate amounts of yarn on the spooler.

The pouch can be made either from leather or from canvas. To make it from leather, take two pieces large enough to form a container for three bobbins. The front section should cover half the bobbin and the rear section should be 2 ins. higher. Put together with beads, and make sure the bottom is even. Then divide the large pocket formed into three sections; each should be large enough to hold a bobbin. You can make a canvas pouch in the same manner. It may be sewed on a band machine.

Paint the top half of three bobbins: one red, one yellow, and one green. The bottom half of each should be painted white and turned up when not in use.

Let the red indicate a spooler out of yarn, the yellow indicate one that is low, and the green one that is filled. Such colors and their meanings are easily recognized by the doffer. The pouch can be painted or dyed for greater contrast. *Ralph Hayes, Greenville, S. C.*

$500 for Best Kink in 1955

$25 for Best Kink in Each Month

In Addition to Space Payment on Acceptance

You undoubtedly know many Kinks and Short-Cuts that are helpful to mill men. Write them down and send them in. We pay promptly on acceptance—before publication. In addition, your Kink may win the $500 check for the best Kink of the year or the $25 check for the best Kink of the month; maybe both!

Send in your Kink now. There is always a contest going on. The more good Kinks you send in, the better your chances of winning a prize in addition to earning some easy money for every Kink accepted.

We will polish up your writing and will have an artist make finished drawings. But send in plenty of details so that your Kink can be clearly explained. Be sure your sketch is clear and well labeled, but it need not be a polished job. Best of all, send us a good glossy photograph of it; we will pay you extra if you do and we can use it.

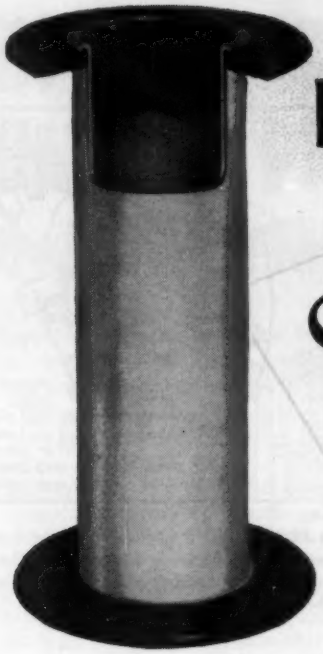
Look over the Kinks in this and other issues. You will get ideas you can use as well as inspiration for Kinks you can send in. We like items that pertain to ways for improving machines, new devices that a mill man can build, attachments or methods of merit—anything that will cut costs, improve quality, or help production.

Your published Kink will be judged impartially by other mill men. In cases of ties, duplicate prizes will be awarded.

RULES OF CONTEST

1. No limit to number of entries.
2. New $25 prize contest every month, $500 prize contest for the year. Monthly contest confined to Kinks published that month, yearly to those published in calendar year 1955.
3. All Kinks paid for on acceptance; extra payment for photographs. Drawings need not be finished (clear detailed pencil sketches will do).
4. Previously published material not eligible for prizes.
5. Unless you advise to contrary, we assume we may sign your name to Kink when published.
6. Prize winners will be selected by readers, a different group each time. At least 200 will be asked to select preferred Kinks in each issue. Their votes will select the best Kink, and their decision will be final.

Send Kinks to:
KINKS CONTEST, TEXTILE WORLD
201 E. Coffee St., Greenville, S. C.



*SPAULDING PATENT

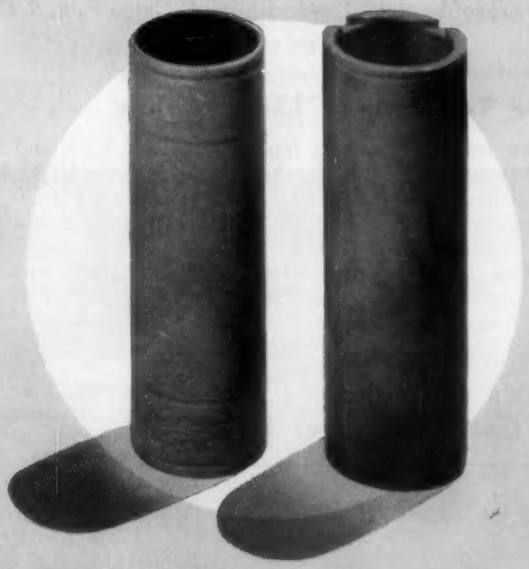
For ALL Synthetic Yarns

Spaulding DYNAMICALLY BALANCED BOBBIN*

This extremely strong, long-lasting bobbin, made from SPAULDITE Laminated Phenolic Plastic and sturdy aluminum tubing, is constructed without screws and engineered so that it cannot become loose or fall apart in service. The aluminum tube is located to provide as large a diameter of head connection as possible to resist yarn pressure. It also supports the barrel against crushing and effects maximum distribution of load. Other features include a precision wear-resistant bearing, heads of rigid, highest impact strength material and a smooth, snag-free finish for proper handling of the most delicate yarns.

OTHER SPAULDING PRODUCTS FOR THE TEXTILE INDUSTRY

Spaulding Vulcanized Fibre and Laminated Phenolic Plastics have unusual combinations of characteristics that especially suit them for a wide variety of textile applications. The SPAULDITE HEADLESS PACKAGE TUBE and TAKE-UP TUBE shown at right, for example, combine light weight with the strength necessary to withstand the crushing power of synthetic yarns. These products can also be provided with a finish, smooth and snag-free or slightly roughened to prevent slipping of yarn on the Tube. Other Spaulding textile products include LAP ROLLS, RECEPTACLES, and PIRN CAPS and REDRAW CAPS for headless package tubes, sizing tubes, take-up bobbins and pirn tubes.



SPAULDING FIBRE COMPANY, INC., TONAWANDA, N. Y.

SPAULDING BRANCH SALES OFFICES

BALTIMORE 18, MD.
BOSTON 16, MASS.
BRIDGEPORT 5, CONN.
CHICAGO 25, ILL.
CHICAGO 38, ILL.
CLEVELAND 14, OHIO
CLEVELAND 16, OHIO (Rocky River)
DAYTON 2, OHIO
DETROIT 1, MICH.
FORT WAYNE 6, IND.
LANSING 10, MICH.
LONG ISLAND, N. Y. (Woodhaven 21)
MILWAUKEE 8, WIS.
NEW YORK 55, N. Y.
NEWARK, N. J. (Union, N. J.)
PHILADELPHIA, PA. (Camden 3, N. J.)
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BERKELEY 10, CAL. C. D. LaMoree
TORONTO 18, ONT., CANADA A. A. Andersen & Co.

Regrooving Loom Lays Makes Them Like New

NEW GROOVE in the loom lay is 3/32 in. deeper than the original one and makes old lays work as well as new ones. Special tool for regrooving is shown above.

The beat-up motion on our E-model and X-2 looms gradually wears the loom-lay surface that holds the reed. When the surface becomes worn, the reed cannot be aligned and washboard shuttles result. The misalignment also breaks warp and filling yarns.

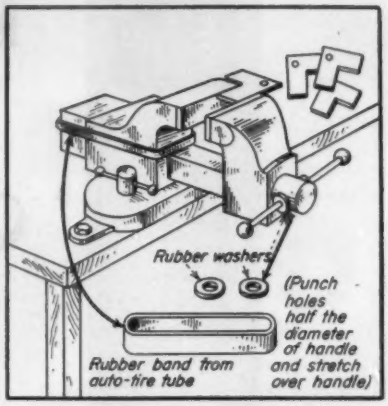
We have worked out a method in our machine shop to correct the worn lays. When a loom lay has to be aligned, we remove the old lay and put in a new one. The old lays are saved; and when several are collected, we take them to the machine shop and regroove the worn surface.

A tool the same width as a reed header was made to fit in the shaper. A jig was made from angle iron to clamp on the shaper bed and hold the lays in position to be recut. The shaper is adjusted to cut a groove for the read header $\frac{3}{32}$ in. deeper than the original groove.

After we gather a supply of about a dozen reworked lays, we don't have to use new ones. Since the regrooved surface fits the reed header snugly, the reconditioned lay holds the reed in alignment as well as a new lay. The small amount of wood cut from the lay does not greatly affect reed height.

We save a few dollars on each lay reused, and our loom reeds are always aligned correctly. *E. L. Shaw, Calhoun Falls, S. C.*

Rubber Band Aids Vise Work



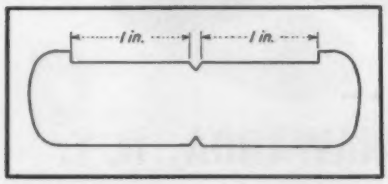
A RUBBER BAND applied to a vise from the inside of the back jaw to the end of the moving front-jaw housing eliminates the slack in the vise-jaw screw.

It is annoying to have to take the slack out of the vise-jaw screws each time you open and shut the vise on small work. The slack can be overcome by the use of a large-size rubber band cut from a truck inner tube and applied to the vise as shown, from the inside of the back jaw to the end of the moving front-jaw housing. The band keeps the slack constantly against the threads. Two rubber washers cut from the same tube and fitted over the vise handle prevent pinched fingers. *Chas. H. Willey, Penacook, N. H.*

How To Repair a Leaking Hose

One way of effectively repairing a hose is to cut a $\frac{1}{4}$x12-in. strip out of an old inner tube and wrap it spirally around the hose. Stretch the strip as it is wound, and keep the wraps close to each other without overlapping. To bind the wrapping, start it with a half hitch and finish it with another half hitch. Make it doubly secure by smearing the hose with a thin coat of rubber cement before wrapping, and wind a piece of string around the wrapping until the cement sets. *Charles S. Bicksler, Lancaster, Pa.*

Here's a Tool To Count Picks per Inch



PICKS PER INCH can be counted at the loom by placing this tool over the cloth.

If you don't have a pick glass, you can count the picks of filling in cloth at the loom with an inexpensive tool. The tool is made from a thin sheet of steel and is machined to the size and shape shown in the sketch.

To count the picks per inch in a fabric with this tool, stop the loom and pull out a loop of filling with your fingers. Suppose the cloth being woven calls for 76 ppi. Restart the loom, and count the picks until 76 are woven. Pull out another loop of filling. Let the loom run again until both loops of filling have woven through the temple, if temples are used.

Place the tool on the cloth and measure the distance between the loops of filling. If the loops are closer to each other than the notches on the counter, there are too many picks per inch; if the loops are farther apart than the notches on the counter, there are not enough picks per inch in the cloth.

This tool can also be used to find the diameter of yarn. Wrap the yarn around 1 in. of the tool surface. Keep the wraps tight against each other without overlapping. Stretch the yarn a little while it is being wrapped to simulate the condition of yarn being woven. Then count the wraps. The diameter of the yarn equals one divided by the number of wraps. *Charles S. Bicksler, Lancaster, Pa.*

Easy Way To Align Motors

To prevent heating, vibration, and increased wear, motors should be checked occasionally for alignment. Although flexible couplings are used, they are ineffective if the motor is not properly aligned. The shaft may become permanently set, and the bearing will wear on one side and increase the air gap on that side of the motor.

Check the alignment by uncoupling the flange between the motor and driven machine; then measure the clearance between the two halves of the coupling at four equidistant points on the circumference. The slightest twist or misalignment will cause the clearance at these points to be unequal.

Check the vibration by putting a bowl of water on the machine bed plate and noting the ripples at different speeds and loads. Intensity of ripple will indicate the increase or decrease in vibration. *W. E. Warner, Essex, England*

SIX INDUSTRIAL PUMPING PROBLEMS Solved by the MOYNO® Pump!

Looking for a pump with a fast-growing reputation for solving tough pumping problems? Then take a look at the simple, versatile Moyno!

Briefly described here are a few of the many successful case histories proving how Moynos handle jobs where other pumps fail. Why is the Moyno a "problem-solving" pump? For one thing, because it differs completely from conventional pumps . . . rotary, centrifugal or piston. Just one rugged moving part—a rotor turning within a stator—does the job.

The list of materials handled by Moyno Pumps gets longer every day. If *you* have a pumping problem, such as handling abrasive slurries, mild acids, caustics, materials that are watery, viscous or even semi-solid—find out if the Moyno can help you! Use the coupon below for prompt, complete information.

1 **Material:** Chromic Acid.
Problem: Material hard on pumps—being slightly corrosive and abrasive.
Solution: Moyno pump on duty for the past two years; has required practically no maintenance. Customer very well pleased.

2 **Material:** Quarried Clay.
Problem: 40 to 60% loss of clay slurry.
Solution: Moyno pump in use for the past 2 years has reduced above production losses to average of less than 5%.

3 **Material:** Calcium Carbonate Slurry.
Problem: Continuous failures of centrifugal pumps.
Solution: Moyno pump still giving perfect service after 1½ years of 24-hour-per-day operation.

4 **Material:** Special Navy Paint Mixture.
Problem: Low volume of gear-type pump; necessity for pre-heating paint before pumping into tank cars.
Solution: Moyno cut tank car filling time from 10 hours to 2½ hours. No need to pre-heat paint. No maintenance costs since Moyno was installed 2 years ago!

5 **Material:** Caustic Solution—for use in mercerizing machines.
Problem: Rotary pumps wore quickly, lost capacity, and had too little suction.
Solution: Moyno pumps cut maintenance and repairs to minimum—had ample suction for drawing caustic through the cloth.

6 **Material:** Anti-Scale Boiler Treatment (alcohols, oils, anti-foam agents, sludge conditioners).
Problem: Frequent pump breakdowns caused by back pressure of 5 spray nozzles.
Solution: Moyno pumps cut pumping time from 20 minutes to 3 minutes and also reduced down time. Both helped to increase production 200%!

FEATURES OF THE MOYNO THAT MAY SOLVE YOUR PUMPING PROBLEM

Positive Displacement—Moynos are available to pull up to 29" vacuum while discharging under pressure. Big Moynos deliver up to 250 g.p.m. at pressures to 600 p.s.i.

Versatile—Handles liquids, slurries, pastes, even semi-solids. Rotor and stator available in stainless steel, other alloys, or plastics, to meet wide variety of applications.

Gentle—No churning; won't break up semi-solids; won't aerate liquids. It even pumps potato salad!

Reversible—Pumps with equal efficiency in either direction.

Trouble-Free—Self-priming; won't cavitate or vapor-lock. Just one moving part—no valves to stick, no pistons to gum up. Built for tough service. Easy to maintain.

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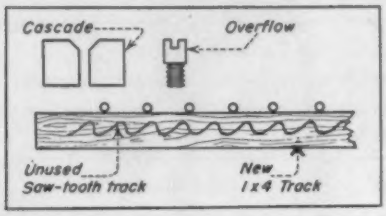
Adapt the Hinnekens Boil-Off Machine To Handle Jig Fabrics



A SMOOTH TRACK for the Hinnekens boil-off machine is provided by a 1x4 wood rail placed as shown in this sketch. Raise the overflow pipe so that the bath covers the cascade to avoid air pockets, and you can boil off many styles of light filament constructions.

Acetate satins, foulards, and other light filament constructions may be successfully boiled off in a Hinnekens machine if a few changes are made.

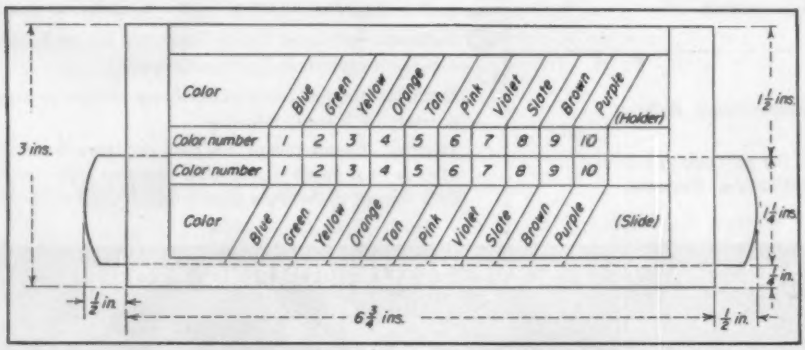
First, the saw-tooth rack is put out of action by placing a 1x4 board over it or alongside it to provide a smooth track for the bars. Bar-marks will not show up in the finished goods, although they may be apparent after boiling off. (The saw-tooth action is, of course, necessary in boiling off heavier fabrics.)

Another important point is that the liquor level in the tank must be sufficient to cover the cascade when the pump is running. If the liquor level is lower, air pockets may form that will float the goods; and creases will result. Raising the overflow pipe will overcome this trouble.

Goods can be prepared for printing, jig-dyeing, or bleaching in the machine set up this way. Solution-dyed constructions can be economically prepared for finishing by this method.

The sketch shows the suggested relocation of the overflow in relation to the cascade and how the 1x4 is positioned to lift the rods clear of the saw-tooth rack.

Slide Rule Helps Chalk Selection for Roving



COLOR COMBINATIONS for marking roving can be easily worked out with this slide rule.

We have made a slide rule to help us select and assign different-colored chalk combinations for the use of all roving-frame tenders in marking their roving. We sort the imperfect returned roving every day and charge all bad work to the tender making it. Clear, distinct chalk marks on each bobbin of roving are essential to properly identify each tender's product.

We use 10 different colors, but one color alone cannot be assigned to each tender because of the large number of tenders employed. One mark of each color is given out to each tender as far as the colors go. After that, two marks of the same color are used. When these combinations expire, we use a combination mark of two different colors.

With the slide rule we can get an almost unlimited number of different two-color combination marks. Each color is numbered and printed on the upper half of the rule holder and also on the rule slide.

To get the different combinations, No. 1 (blue) is moved under No. 2 (green) to give a combination marked blue-green. No. 1 is then moved under No. 3 for a new combination (blue-yellow), and so on consecutively to No. 10 on the holder. This gives a total of nine different combinations. Following this, No. 2 is moved under No. 3 and through to No. 10. Each number on the slide gives more combinations as needed.

Hand Counters Reduce Inspectors' Errors

A spot check revealed that our graders' reports were not always correct. Checking back on the graders, we found that they made mistakes in counting the defects.

We supplied our graders with hand counters, which are used to record the defects. The final figure on the hand counter at the end of the roll is entered on the report, and the counter is turned back to zero for the next roll of cloth. Reports are accurate now. *Dan Singer, Newton, Mass.*

Best-Kink Award for January

Each month TEXTILE WORLD awards $25 to the submitter of the Kink judged by a panel of over 200 practical mill men as the best for that particular month. A new batch of Kinks appears each month, and a new group of readers acts as judges each month.

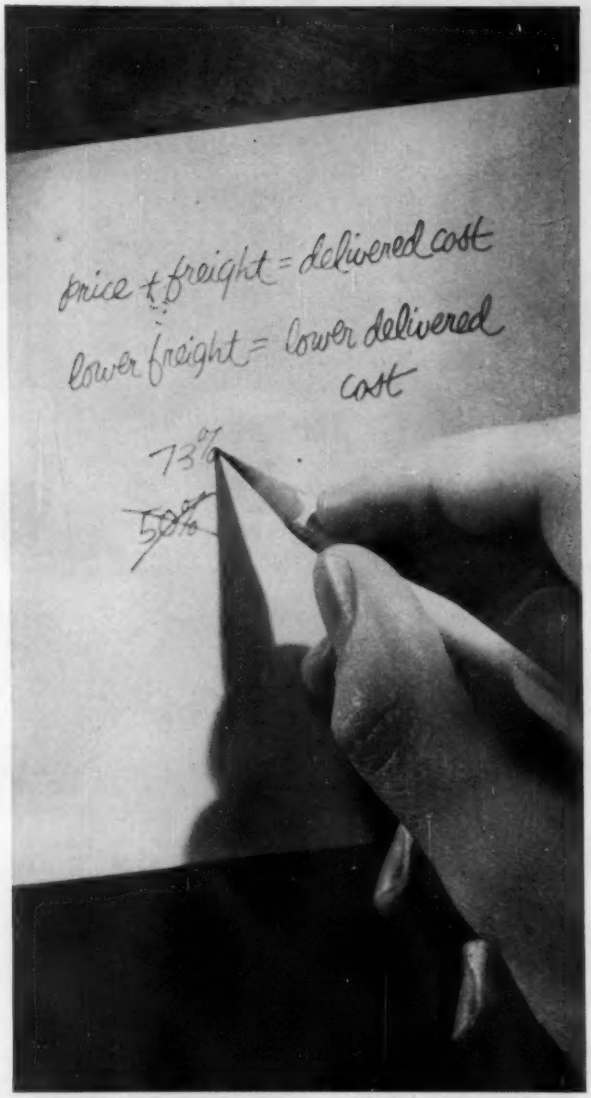
If you are asked to judge one of these days, be sure to help select the best Kink by sending back your answer in time for final tabulation. Closing date for judging is the last day of the month in which the Kink appears.

The best Kink for January, according to TEXTILE WORLD reader-judges, was:

"Creel For Selvage Ends"

By A. O. Pendleton, Roanoke Rapids, N. C.

Mr. Pendleton is being sent a check for $25 with the compliments of TEXTILE WORLD.



THE ECONOMIES OF 73% CAUSTIC SODA SOLUTION are no longer reserved for the largest users . . . lower shipping costs now make it the best form for you, too.

DOW

73% CAUSTIC SODA . . .

a little figuring may prove it your best buy!

FAST, DEPENDABLE DELIVERY of uniform 73% caustic solution is assured through use of Dow-owned tank cars. These 8,000- and 10,000-gallon cars are insulated, protectively lined, and fitted with nickel heating coils; unload from top or bottom by air pressure or pump. Frangible discs, protective plug cocks are two of the advanced safety features.

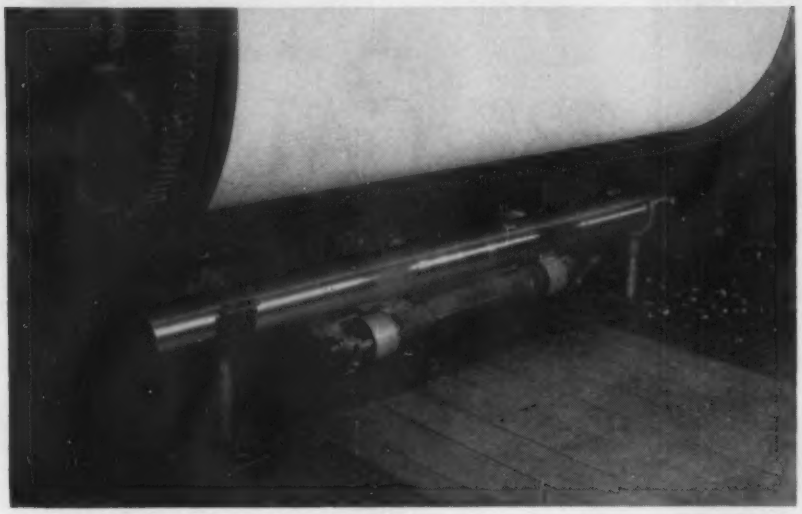
How long has it been since you have checked your caustic buying habits in the light of increasing cost factors? Higher freight rates are erasing the savings in 50% caustic solution for more and more users every day. Even users located near shipping points save money with 73%, since the higher price of even shorter distance hauls quickly wipes out the price difference between 73% and 50%.

73% caustic must be diluted when received, but most caustic users dilute 50% solution, too. The cost of additional handling equipment for dilution, when fairly amortized, becomes a small item in comparison to your over-all cost reduction.

If you are still buying 50% caustic solution, discussion in your plant and consultation with our Alkali Technical Service is indicated. Perhaps the comprehensive Dow Caustic Soda Handbook can help you in preliminary discussion. Ask your Dow sales representative for your free copy or write to THE DOW CHEMICAL COMPANY, Dept. AI. 363E, Midland, Michigan.

you can depend on DOW CHEMICALS DOW

Press-Roll Holder Saves the Slasher's Time



THIS LEATHER-LINED HOLDER installed under the take-up beam of our slasher has "cupped hands" to keep the press roll centered when it is down.

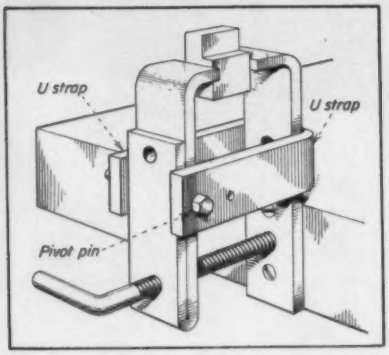
When it came time to doff the slasher, our press roll often got out of alignment when it came down. Sometimes, the back man would have to hold the press roll to keep it square.

We solved this problem by installing leather-lined rests for the press roll. The rests are made with a 2½x6x¼-in. piece of sheet steel as the base and a solid piece of 1½-in. shafting to support the ⅜x2-in. piece of flat steel bent to fit the press roll. The three pieces are welded together, and the unit is fastened to the floor with lag screws.

For a 49½-in. beam, we put the holders 40½ ins. apart. We use a 48½-in. press roll.

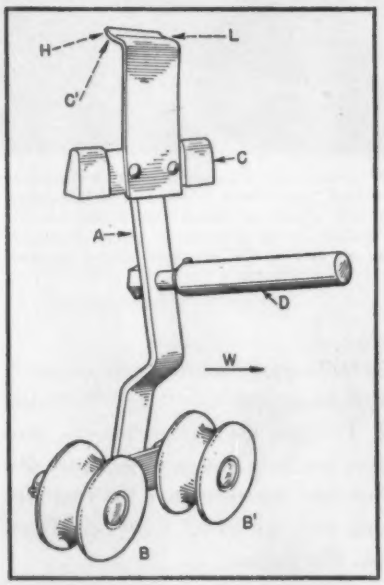
We don't have trouble with press rolls getting out of line any more. *Paul Stallings, Marion, N. C.*

Make This Vise From Scrap



THIS SMALL VISE can be made from ¼ x 1-in. steel stock. For the fulcrum use a U strap with holes for adjusting the front jaw. The front or moving jaw is pivoted on a pin through the end of the U strap; and as the handle is turned backwards (to the left), the jaws come together at the top to hold the work. *Charles H. Willey, Penacook, N. H.*

Bobbin Lifter Is For Large-Package Frames



BOBBIN LIFTER is simple to make and is particularly helpful on large-package frames. Rollers *B* rest on the guard rail of the frame.

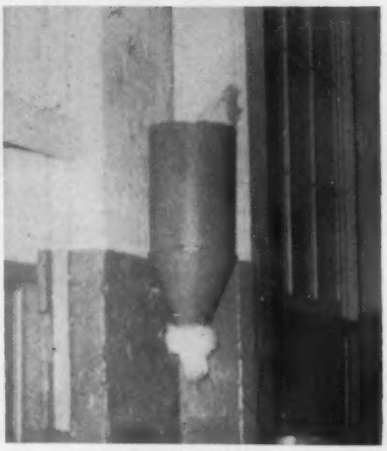
If you have trouble with bobbins sticking on spindles at doffing time, you may want to make yourself one of these bobbin lifters, designed by J. Colby Lewis and his staff at Coats & Clark, Inc., Pawtucket, R. I.

Framework *A* is supported by rollers *B* and *B'*, which rest on the guard rail of the frame. Pressure on the handle *D* keeps the locating plate *C* in contact with the spindle rail and places the cam *C'* in its working position.

The cam *C'* is made with a certain amount of slope, so that the low point of the cam extends under the metal rim at the bottom of the bobbin. As the lifter moves along in the direction shown by the arrow *W*, the cam surface extending from the low point *L* to the high point *H* loosens the bobbins so that the doffers can remove them with a normal amount of effort.

There are two improvements possible in the bobbin lifter. Cam *C'* can be made adjustable (up or down) to adapt the bobbin lifter to different bobbin lines. A small bracket can be added to hold a piece of chalk, so that one motion will chalk the yarn and lift the bobbins. *Saco-Lowell Bulletin*

Economical Dispenser Saves Waste and Time



WASTE DISPENSER is filled with card strips for cleaning.

We have devised an economical holder for cleaning waste, which consists of a round tin cylinder with a funnel-like bottom crimped on to it.

The cylinder is about 10 ins. high and 8 ins. in diameter, and the funnel has a 2½-in. opening at the bottom.

We fill the holder with card strips, and the operator can pull off enough in one motion for the usual cleaning. The device saves us both time and waste. *J. B. Boyter, Gastonia, N. C.*

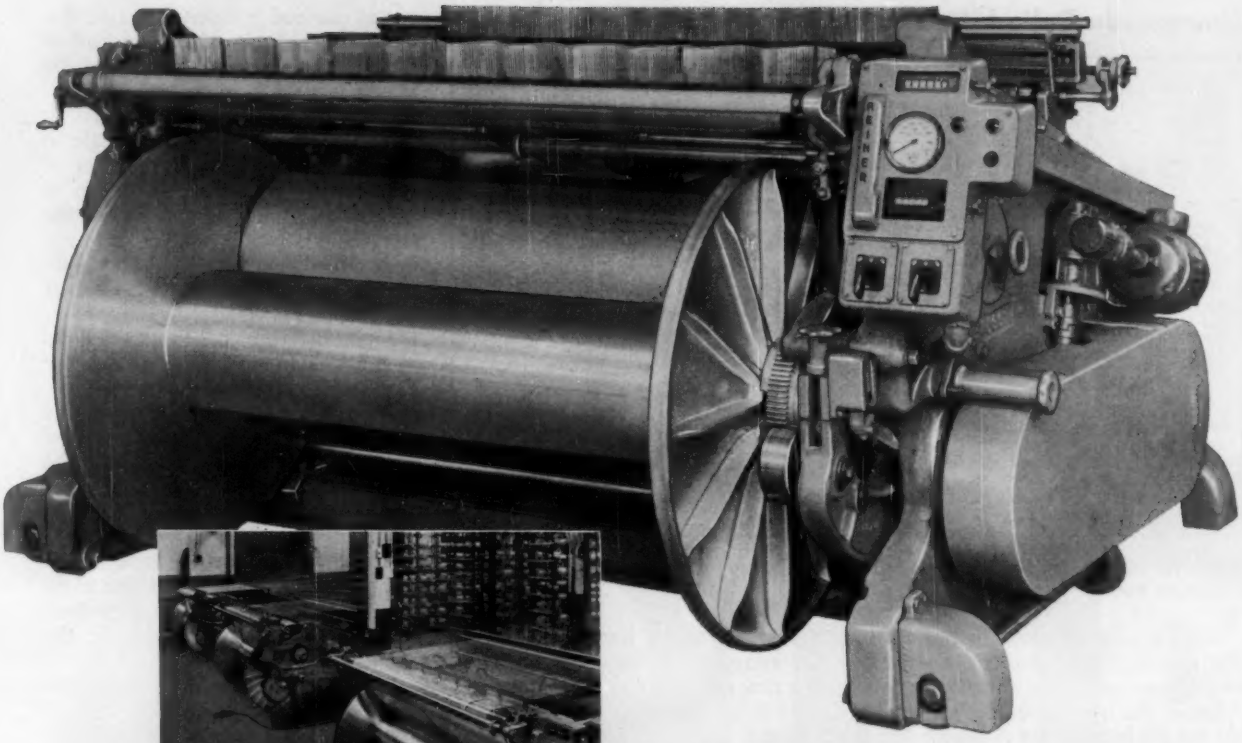


Photo Courtesy Woodside Mills, Simpsonville, S. C.

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SOME FEATURES OF THE MODEL HD

Spindle drive—Flange diameters up to 36"—Length of beam to customers' specifications—Suitable for dye beams—Speed range from 100 to 900 yards per minute through rheostat control.—Independent adjustment for inching and starting speed, provision for foot-operated inching switch—Rheostat geared to presser roller to maintain pre-set constant yarn speed—Traverse motion—Electric beam doffing device.—Stop motions—Lateral motions to move unit easily from creel to creel—Comb oscillating movement—Double acting brakes on all rotating units for quick synchronized stop—Centralized control panel—Typical Reiner type heavy frame constructions—Lower overall working height of machine—Comb arrangement permits easy access for operator—7½ H.P. direct current motor with generator.

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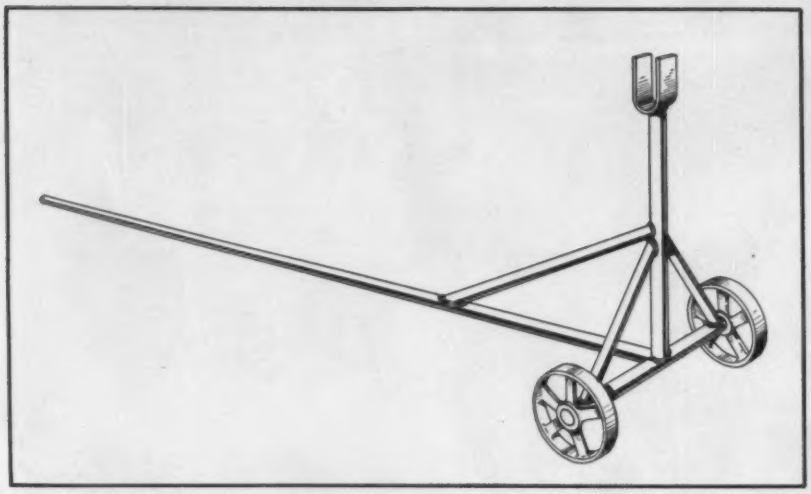
Homemade Dolly Lifts Cloth To Inspectors' Frames Easily



TILT THE DOLLY slightly, and the roll of cloth is lifted and rolled right on the stand of the inspector's frame.

Lifting rolls of cloth to the cloth stand back of inspectors' frames in the cloth room used to be a man-sized job. Most of the time we used two men to do the job because the rolls were lifted by hand.

Now we use a homemade device that makes it easy for one man to put up a new roll of cloth. The device was made in our machine shop.

Two 6-in. wheels are fastened on a 12-in. axle. A 6-ft.-long shaft of 1¼-in. dia. at one end is tapered to 1-in. dia. at the other end. The large end of the shaft is welded to the axle for the wheels.

A 2-ft.-long shaft of 1½-in. dia. is welded to the axle at a 90° angle to the long shaft. Two 1-ft. braces of 1-in. dia. are welded to the center of the 2-ft. shaft and to the ends of the axle just inside the wheels.

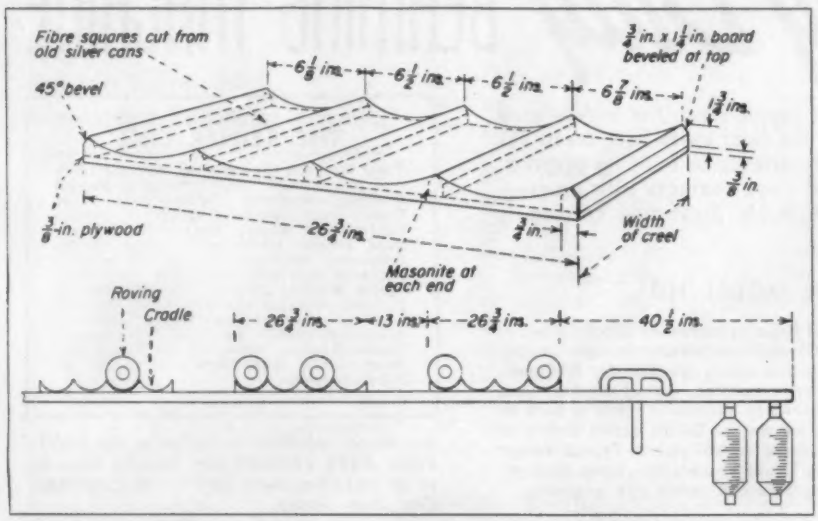
Another brace 18 ins. long and 1½ in. in diameter is welded to the 6-ft. shaft and to the 2-ft. shaft.

A flat-metal piece constructed to form a U is welded to the end of the 2-ft. shaft to lift a roll of cloth.

A roll of cloth to be placed on the inspector's frame is rolled to the frame on a truck and placed on the floor parallel to the frame. Then one man pivots the U-piece on the lifting device under one end of a 1-in. shaft stuck through the paper tube in the roll of cloth. One end of the cloth roll is easily lifted to the inspector's frame. The other end is lifted the same quick, easy way.

Now, one man does the work formerly done by two men and does it without any physical strain. *Herman Morris and H. L. Mills, Joanna, S. C.*

Cradles on Spinning Frame Protect Spare Roving



ROVING CRADLE is used on spinning frames to prevent disheveled roving. Spare roving is kept tidier on the creel. Spaces are left for empty bobbins.

Roving men stacked the roving in neat piles on our spinning frames, but when they made their next rounds the piles were often scattered. This condition called for extra handling, which resulted in roving that was often dishelved on the outside. This roving, of course, resulted in poor yarn.

We overcame this difficulty by making a number of cradles to rest the roving on when the roving lay on the top of the frames. The cradles are made in sections of four; and when the roving man lays the bobbins in the cradle, the bobbins stay put until the spinner needs them.

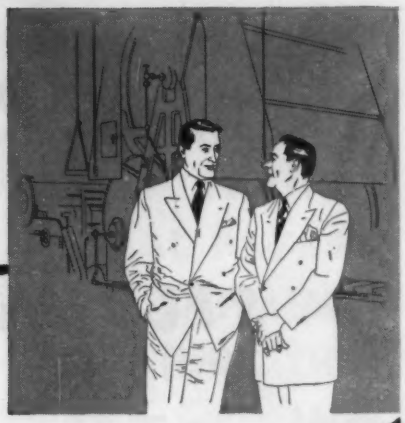
The cradles are distributed over the entire length of the frame with spaces left for the spinner to lay empty bobbins. When the cradles are properly distributed, the spinner seldom has to make an extra step to reach a full bobbin or lay down an empty one.

We make the cradles from ⅜-in. plywood, pieces of discarded sliver can, and Masonite board. Five wooden strips are nailed across the plywood base. The sliver cans are cut into sections and also nailed to the plywood base. The base size depends upon the roving-bobbin size. The Masonite is cut to the shape of the curved top pieces and nailed to the base and cross pieces. The edges are all smoothed off to prevent snagging of the roving.

When the roving is laid in the cradle, lay the dangling end of roving under the bobbin to prevent the loose ends hanging from the top of the frame. Loose ends if not tucked away get blown by the overhead cleaner as the cleaner moves over the frame.

These precautions and the cradles have prevented many ends down, helped our yarn quality, and given our spinning room a more-orderly appearance. *A. O. Pendleton, Roanoke Rapids, N. C.*

the weaver's friend



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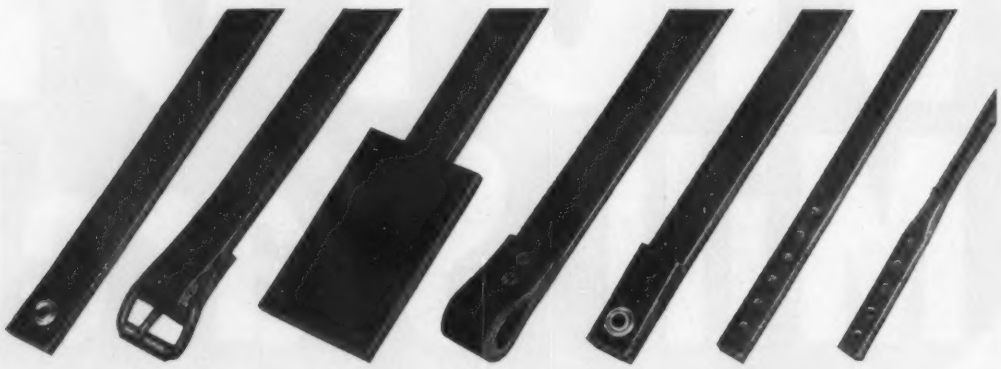

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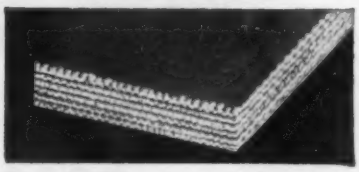

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TEXTILE WORLD, A McGraw-Hill Publication, New York 36, N. Y. March, 1955

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NO REPEATS . . . Listed here for March are current bulletins reviewed by the editors of TEXTILE WORLD. To get the ones you need, circle the number on the Reader-Service card, as described on the preceding page.

TEXTILE MACHINERY

High-speed looms—Up to 250 ppm. No superstructure. Loose reed motion allows heavier goods to be woven. Ruti Machinery Works. (F-1)

Tufting machine—208 ins. wide for full room-size floor coverings in cut pile, short loop, or long loop. Dual drive directly connected to main shaft. Super Tufter Co., Inc. (F-2)

Picker-lap tester—Measures and records longitudinal and lateral weight variations of picker lap, minus moisture, while the lap is made. Brush Electronics Co. (F-3)

Combing machine—For wool, silk, and rayon. Up to 40 lbs. per hour on recombing. 110 to 120 nips per min. Working width 17 ins. Coiler head. Ernest L. Frankl Associates. (F-4)

Wool opener—Production up to 5,000 lbs. per hr. on four-cylinder opener. 34-in.-dia. cylinders on 3 7/8-in. shafts. Stock delivered to washer. C. G. Sargent's Sons Corp. (F-5)

Ring spinning frames—For worsted yarns. Long-draft apron. Rubber-covered roller for apron driving. Self-lubricating spinning rings. Societe Alsacienne de Constructions Mecaniques. (F-6)

Small continuous bleach range—25 yds. per min. or 240 to 1,500 lbs. per hr. 15x21-ft. floor space required. 60 to 120 gals. per min. water consumption. Rodney Hunt Machine Co. (F-7)

Single-action napper—20-roll machine for heavy fabrics. 30 rolls for light fabrics. Electrically controlled energy or cone-pulley drives. Woonsocket Napping Machinery Co. (F-8)

Tensionless automatic jig—Constant linear cloth speed. Gradual starting. Batches up to 39-in. dia. Mezzera S.P.A. (F-9)

High-speed tenter—Sets nylon tricot at 50 yds. per min. Stepless speed range of 1 to 200 yds. per min. Working widths between 24 and 260 ins. Robert Reiner, Inc. (F-10)

AUXILIARY EQUIPMENT

Static-control equipment—For all machines. Positive control of ionic discharge. Removes heavy static charges. John Hewson Co. (F-11)

Traveling cleaner—Prevents lint accumulations; eliminates ceiling blowdown. Increases production of clean yarn and cloth. Rotates 360°. Bahnson Co. (F-12)

Pneumatic controllers—For flow rate, liquid level, viscosity, pressure, temperature, vacuum, and motion. Case mounted, valve mounted, or miniature-recorder mounted. Catalog 53-10. Fischer & Porter Co. (F-13)

Label-attaching machine—Marks and attaches labels to fabrics by heat in ½ sec. Also marks cellophane packages. Soabar Co. (F-14)

Yarn-imperfection indicator—Counts neps, motes, slubs. 50 yds. tested in 30 secs. Direct reading of results is immediate without computation. (Neptel) Sheffield Corp. (F-15)

Cleaning fan—For cotton spinning

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frames. Rubber blades rotate slowly on rack and pinion drive. 60-watt power consumption. Stellite American Corp. **(F-16)**

Thickness tester—For wide range of materials. Tests compression and recovery. Applies dead load to sample without impact. Custom Scientific Instruments, Inc. **(F-17)**

Balmes draft system—Without aprons. Spins from ¾- to 4-in. staple. Fully automatic self-threading front condenser. Suitable for 35 or 60° roller stand. McGlynn Hays Industries, Inc. **(F-18)**

Accelerated-drying device—Applied to any cylinder drying machine. 33 to 66% increased drying capacity without steam-consumption increase. R. J. Dealy & Sons. **(F-19)**

Variable-speed spinning-frame drives—Frame speeds can be changed for new yarn numbers in few minutes. Four parts make up drive. Gates Rubber Co. **(F-20)**

SUPPLIES AND CHEMICALS

Bobbins and shuttles—Maple, birch, or beechwood spinning bobbins for warp and filling. Dogwood or persimmon shuttles with automatic tension eye. Lowell Shuttle Co. **(F-21)**

Nylon twister travelers—Eliminate grease stains. Run up to 10,000 ft. per min. Last for 3,000 hrs. All sizes and styles. Coats & Clark Sales Corp. **(F-22)**

Spindles—With SKF roller bearings. Filling spindle with quill clutch. Warp spindle with light-metal adaptor. Twister spindle for uptwisting. Lenkotex Co., Inc. **(F-23)**

Mill boxes and trucks—Made from vulcanized fibres. Compound top rail. Kiln-dried hardwood for runners. Swivel or rigid casters. William Bal Corp. **(F-24)**

Industrial crayons—For cotton, wool, silk, rayon, and nylon cloth, and roving. 18 colors. Textile colors for designing departments. American Crayon Co. **(F-25)**

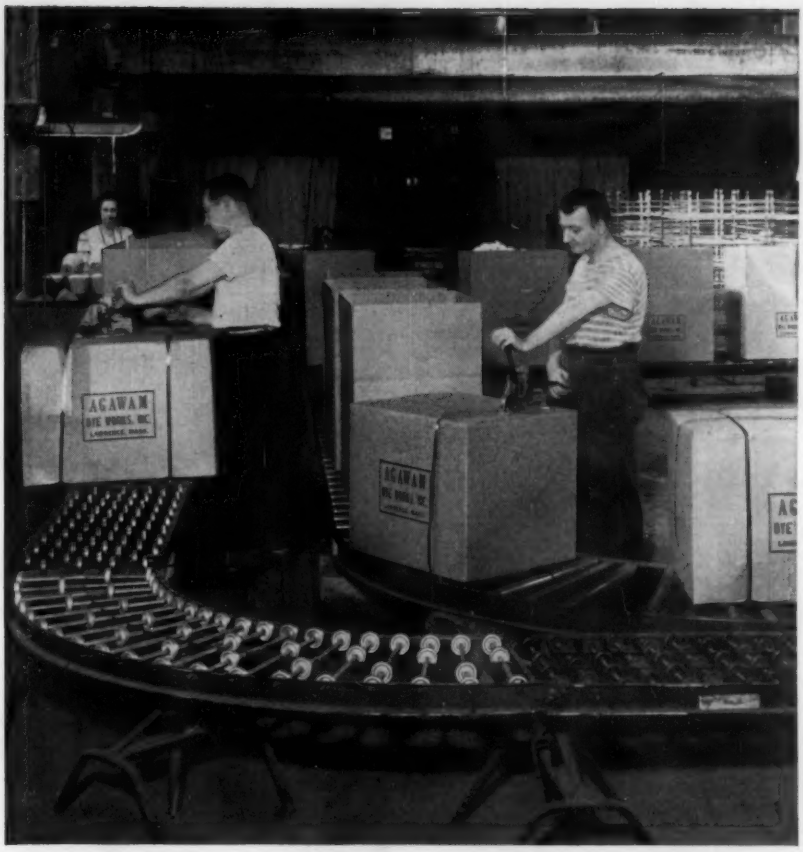
Checkstraps—Give up to 50% more service with less adjustment. Rubberized fabric construction. Individual or multiple replacement. Dayton Rubber Co. **(F-26)**

Fugitive tints—For all textile fibers. In liquid and powder form. Applied by soaking, spraying, brushing, or daubing. Removed in scouring bath. United States Testing Co., Inc. **(F-27)**

Sodium hydrosulfite—Chemistry, application, and analysis of Lykopon. 94 to 96% as $Na_2S_2O_4$. Readily soluble in water. Rohm & Haas Co. **(F-28)**

Cyanoethylated-cotton dyeing—Differential-dyeing tests. Stability of treated fiber. Exhaustion rates of various dyes. Bulletin 837. American Cyanamid Co. **(F-29)**

Dacron dyeing assistant—Also for Dacron, wool, and viscose blends. Pro-



The Model AC Seal-Feed Strapping Machine in use here is one of a complete line of Signode tools widely used in the textile industry.

Smaller cartons plus steel strapping speed yarn handling, improve protection

Many yarn mills and dyers find that a simple change to smaller size containers is the key to shipping cost reductions and better customer relations. The change in carton size recognizes that customers often have to move containers in small elevators and on hand trucks.

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Tightly strapped packages keep yarn cleaner, eliminate chaffing. Thus losses from damage in transit decrease sharply, and customers appreciate the improvement.

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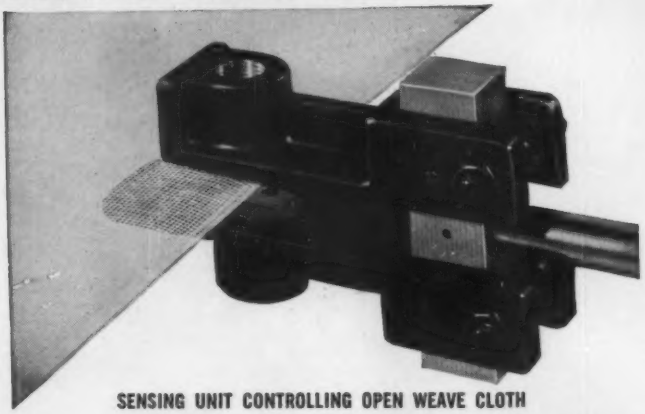
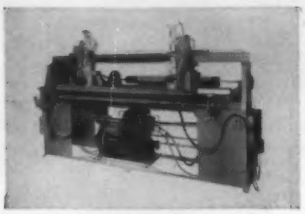
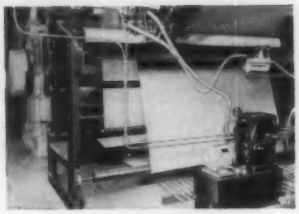


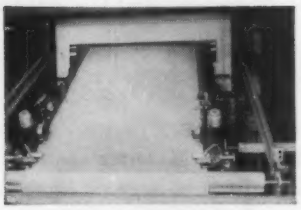
SENSING UNIT CONTROLLING OPEN WEAVE CLOTH



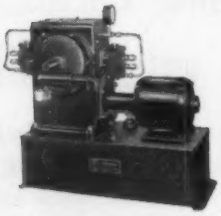
SELVAGE MARKER



PIN TYPE TENTER



CLIP TYPE TENTER



CLOTH GUIDE REGULATOR

The Askania Cloth Guide Control has been tested on hundreds of applications—it's extremely fast, accurate and dependable. It guides fast moving webs with a breath of air. It's an ideal unit to solve your cloth guiding problems on Tenter Frames, Tubing Machines, Folding Machines, Examining Machines, Printing Machines, Slitting Machines, Labeling Machines or Rewinding Machines. Askania Cloth Guide Controls are establishing new standards in the finishing departments of hundreds of Textile Mills. If you have a cloth guiding problem—ask for Bulletin A-161, or call Askania engineers for full details.

ASKANIA REGULATOR COMPANY
272 E. Ontario Street, Chicago, Illinois
Subsidiary of General Precision Equipment Corp.

READER SERVICE *(Continued)*

motes uniform dyeing at low temperatures. Applied from neutral, acid, or alkaline baths. Bulletin F-7370. Carbide & Carbon Chemicals Co. **(F-30)**

ENGINEERING AND MAINTENANCE

Chains—Specifications and working-load limits for alloy-steel chain for lifting. Tensile strength of about 125,000 psi. Joseph T. Ryerson & Son, Inc. **(F-31)**

Centrifugal pump—All-bronze pump. Resistant to corrosion, erosion, cavitation pitting, deformation, and wear. Handles acids, salts, and alkalis. Bulletin P-30. Ampco Metal, Inc. **(F-32)**

Adjustable-speed drives—With electronic controls and regulators. Provide accurate motor-drive control and regulation. Reliance Electrical Engineering Co. **(F-33)**

Mastic coatings—To protect brick, masonry, and concrete sidewalls, roofs, storage tanks, and process equipment. Emjay Maintenance Engineers. **(F-34)**

Nonshrink concrete floors—By resurfacing, patching, and bonding. For nonshrink grouting under machinery, and nonshrink tile grouting. A. C. Horn Co., Inc. **(F-35)**

Chains and sprockets—Chain assembly and disassembly. Lubrication and maintenance of chains and sprockets. Folder 72-54. Morse Chain Co. **(F-36)**

Lighting equipment—Fluorescent units for slimline lamps. Porcelain enamelled channels. Dust-tight units. Catalog A1, 2, 5. Benjamin Electric Mfg. Co. **(F-37)**

Fans—Vaneaxial and tubeaxial. Blade pitch varied to give uniform air flow over the entire blade to give high efficiency. Bulletin 3533-EF. Buffalo Forge Co. **(F-38)**

Maple floors—Controlling expansion. Tendency to shrink and expand can be greatly reduced and controlled by proper installation methods. Maple Flooring Manufacturers Assn. **(F-39)**

Needle control valves—For low rates of flow. Formulas for calculating size of valve for liquids, gas, and steam. Bulletin 5C-13. Foxboro Co. **(F-40)**

GENERAL

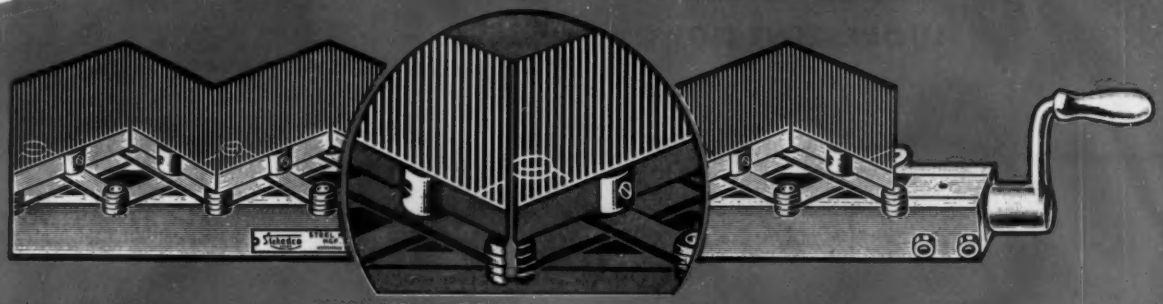
Safety program—Small-plant safety, production, and management problems. Employee selection and placement, labor conditions and supervision. American Mutual Liability Insurance Co. **(F-41)**

Time-recorder products—Prevent disputes over time. Provide wage-hour-time records in print. Speed payroll computation. Lathem Time Recorder Co. **(F-42)**

Expendable pallets—Each post supports 3,000 lbs. Posts range from 4 to 16, each 5- to 7-in. dia. Labor-handling costs reduced. Addison-Semmes Corp. **(F-43)**

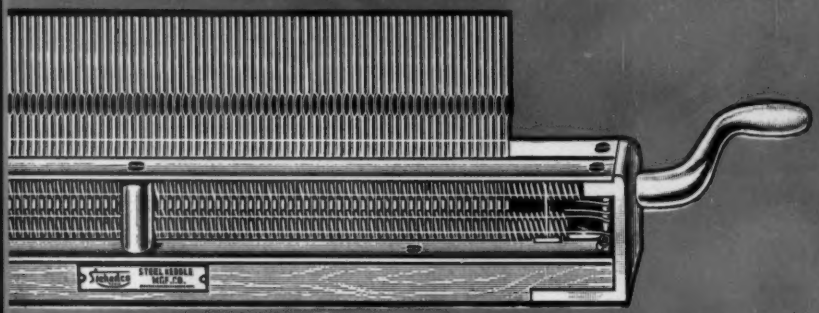
LOOK TO Stehedco

...for these WARPER ACCESSORIES

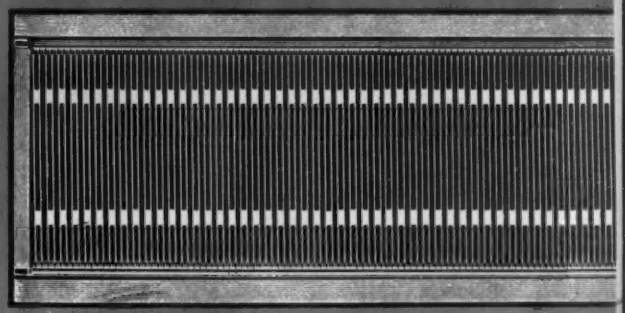


POSITIVE EXPANSION COMBS–
Stehedco construction, best by far, features the locating lug thus insuring faster more accurate positioning at the joints.

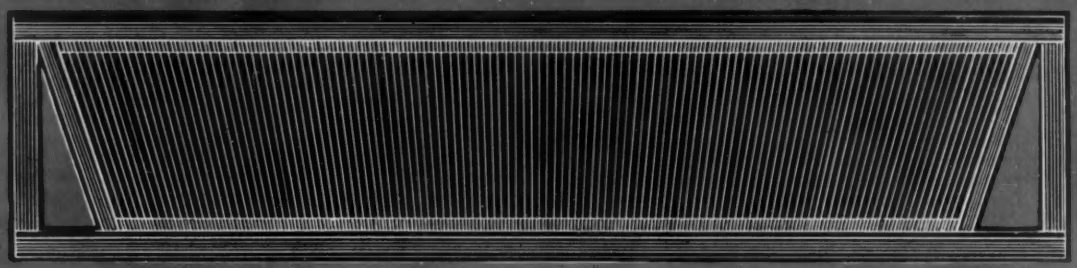
All Stehedco Warper Combs and Reeds are Hard Chrome Plated to give maximum wear resistance



SPRING EXPANSION COMBS — Whatever type you prefer, Stehedco has it! — Screw or Tape type; plain dents, eye dents for leasing or staggered dents. Screw type with eye dents is illustrated.



CROSSING REEDS — Single crossing reed (illustrated) for a single end lease. The Stehedco four way crossing reed is also very popular for obtaining a four sheet and single end lease.



FAN REEDS — Advanced construction methods insure the most uniform spacings possible. A good point to remember is that a fan reed increases in cost and decreases in spacing uniformity as the fan is increased. For best results keep the fan to a minimum.

Sales prints covering any of these items are available upon request. Ordering is simple . . . just fill in the specification blocks on the print.

If you need help Stehedco field or plant experts are always available. Watch for the new Stehedco catalog on Warp and Yarn Preparation items coming off the press soon.

Stehedco and Southern
WORLD FAMOUS TRADE MARKS OF THE
Steel Heddle
Mfg. Co.

STEEL HEDDLE MFG. CO., 2100 W. Allegheny Ave., Phila. 32, Pa.
SOUTHERN SHUTTLES Paris Plant . . . Greenville, S. C.
A Division of STEEL HEDDLE MFG. CO.
STEEL HEDDLE COMPANY OF CANADA, LIMITED
310 St. Hubert Street • Granby, Quebec, Canada

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Textile Supply Co., Dallas, Texas • Albert R. Breen, Chicago, Ill.

1-R-1

BENJAMIN

"VAPOR-TITE"

FLUORESCENT LIGHTING UNIT

"EASY-IN, EASY-OUT" lamp servicing despite high humidity with Benjamin patented "Springlox" depressible, rust-resisting metal-clad lampholders, featuring positive contact. Lamps are locked securely in place.

"Vapor-Tite" assures you of all these modern fluorescent lighting advantages in humid locations:

1. No Service Failures due to Humidity!
2. Solid Armor of Porcelain Enamel keeps out Moisture.
3. One-piece housing—No place for rust to get a foothold!
4. 85% or higher Reflection Factor!
5. Easily operated, gasketed, hinged louver frame with a choice of double-strength Grade A or Tempered Plate Clear Glass or Wire Glass.

Available for two or three 40-watt Preheat or Rapid-Start Slimline fluorescent lamps

872

For complete details on Benjamin humidity-defying fluorescent lighting units, send for Bulletin AD5929. Benjamin Electric Mfg. Co., Des Plaines, Ill. Makers of famous Benjamin and Leader Line Lighting Equipment and Sound Signals for Industry, Institutions and Commerce.

Sold Exclusively through Electrical Distributors

READER SERVICE *(Continued)*

Communications—To control incoming materials, production, quality control, materials handling, sales orders, and maintenance. Tel-Autograph Corp. **(F-44)**

Long-term purchase or lease—For winding and twisting machinery. New cost-reducing machines put to work immediately with little cash outlay. Universal Winding Co. **(F-45)**

Flock finishing—Flock materials and uses. Types of adhesives. How adhesives and flock are applied. Behr-Manning. **(F-46)**

Wire stitching—For corrugated and solid-fibre boxes. Protects against pilfering. Reduces labor and materials costs. Bulletin AD131. Acme Steel Co. **(F-47)**

Coffee-service machine—500-cup capacity. Individual taste control. Vends only dry powdered ingredients. Bulletin CV-654. Mills Industries, Inc. **(F-48)**

Small fork trucks—Features of design, construction, performance. Selection of proper size, weight, and capacity. Market Forge Co. **(F-49)**

Pallet truck—2,000-lb.-capacity lightweight, hydraulic truck for single-face and double-face pallets, and skid platforms. Circular 26A. Lewis Shepard Products, Inc. **(F-50)**

PRACTICAL WORSTED COMBING, by T. F. Griffin; Chemical Publishing Co., 212 Fifth Ave., New York, N. Y.; hard cover, 169 pages, $4.

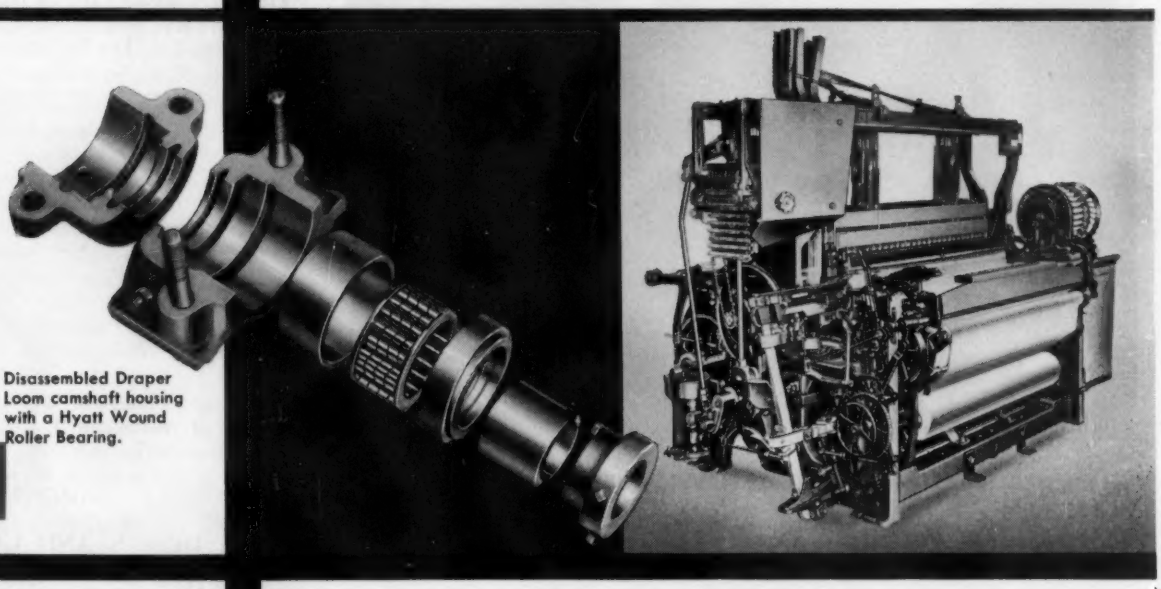
Mr. Griffin is chief technician of worsted processing at the University of Leeds in England. Since worsted systems in this country use a good deal of English and Continental equipment, a book written by an Englishman has much to offer American worsted-mill men. The book goes into detail about backwashing, gill boxes, Nobel combing, and rectilinear combing. Mechanics, settings, and calculations are explained from the standpoint of good machine operation.

THE PHYSICAL CHEMISTRY OF DYEING, by Thomas Vickerstaff; Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N. Y.; 514 pages, $7.50.

LOOMS

number four of a series depicting

MORE AND BETTER TEXTILE PRODUCTION WITH HYATTS



Disassembled Draper Loom camshaft housing with a Hyatt Wound Roller Bearing.

Draper Model XD Loom with various sizes and types of Hyatt Roller Bearings on the crankshaft, camshaft, rockershaft, whip roll, whip roll arms, yarn beam and other principal positions.

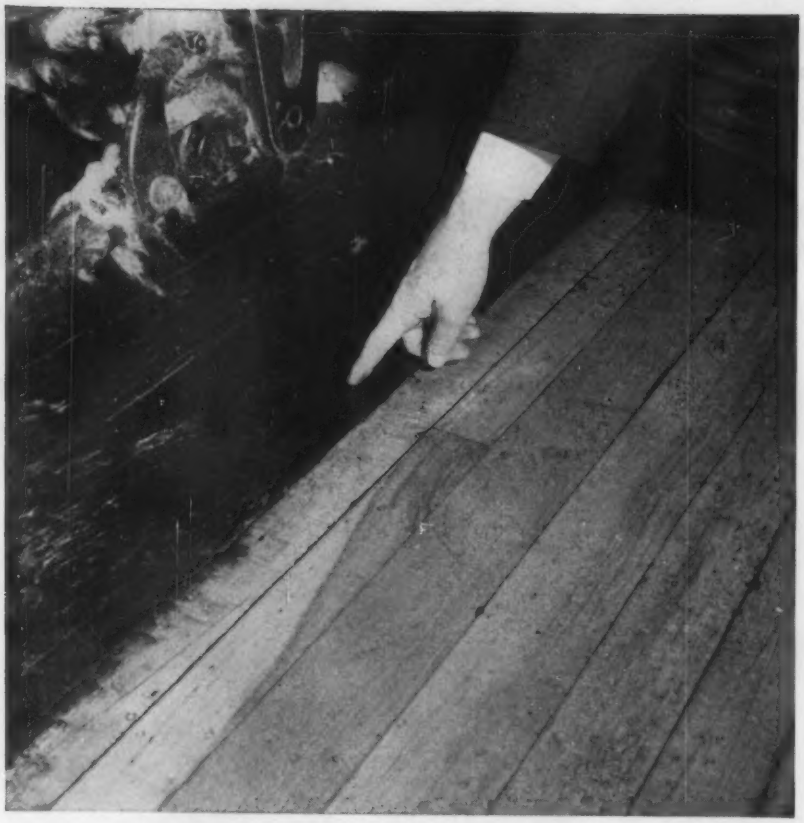
More "firsts" and fewer "seconds" are the natural result when the principal shafts of your looms are equipped with Hyatt Roller Bearings.

Hyatts prevent lubricant from splattering on the cloth because all housings are securely sealed.

Moreover, Hyatt-equipped looms require considerably less starting power than when old-fashioned sleeve bearings are used. In fact, Hyatt Roller Bearings reduce friction so that looms can be easily turned by hand whenever necessary—another reason why you're always sure of *more and better textile production with Hyatts!* For further details on the profitable application of Hyatt Roller Bearings to textile machinery, request Bulletin T-54 from Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER



Tennant shows 127-year-old EXETER MANUFACTURING CO.

how to make floors TWICE as bright—at ½ the cost

Here, in America's oldest cotton mill (in continuous use since 1827), the TENNANT System works its modern magic on the famous floors in Exeter, N.H.

You see the results above. The *tennantized* area (right) is easily twice as bright as before. Yet mills tell us it costs about 50% less to get such results *today* than it did just 5 years ago.

Here's why. Improved Tennant techniques now make floors far brighter, more dirt-resistant. Result: you save 40% to 60% in manhours, buff only 1/5 to 1/10 as often as before, and get 4 times longer average life from newly developed floor seals.

Write today; ask for estimate of NEW savings now possible in your mill.

VERY LITTLE BUFFING is needed today to keep Exeter's historic floors bright. Mill was built shortly after War of 1812.

TENNANT
ESTABLISHED 1870

G. H. TENNANT CO.
2586 N. 2nd Street
Minneapolis 11, Minn.

FLOOR MAINTENANCE SYSTEM

BOOK REVIEWS *(Continued)*

This second edition has been revised with an extra 100 pages added to bring the discussion up to date. Dyeing behavior is described in terms of thermodynamic quantities.

The first section of the book covers the properties of dyes and the general principles of dyeing. Then the dyeing of the various fibers is examined.

HUMAN RELATIONS IN SMALL INDUSTRY, by John Perry; McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y.; hard cover, 313 pages, $5.50.

This book is aimed at the owner or manager of a small plant of up to 500 or so employees. It is aimed at the men who can, if he wants to or can justify it, start a human-relations program. For a manager who has never bothered about such things, the book is an excellent primer of the basic ideas of modern industrial democracy.

There are chapters on what employees want, communications, building group feeling, job satisfaction, attitudes of management, attitudes of union leadership, meetings, etc. The inevitable conclusion is: It's up to you.

CAMS, DESIGN AND LAYOUT, by L. Kasper; Chemical Publishing Co., 212 Fifth Ave., New York, N. Y.; hard cover, 101 pages, $3.50.

Mr. Kasper is chief mechanical engineer for Steel Heddle Mfg. Co. He has written a book that covers the design of cams thoroughly but without any wasted motion. Excellent sketches are included on almost every page to illustrate exactly what Mr. Kasper is writing about. Reciprocating, rotating, cylindrical, rocker, rectangular-motion, sleeve, and miscellaneous cams are explained with precision.

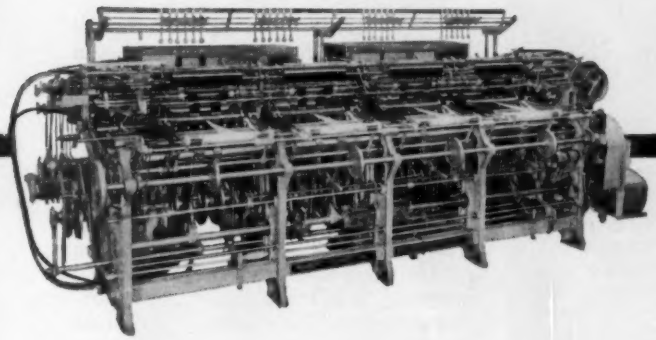
INDUSTRIAL DETERGENCY, edited by William W. Niven, Jr., Reinhold Publishing Co., 430 Park Ave., New York 22, N. Y.; hard cover, 340 pages, $8.75.

One 28-page chapter, written by Martin H. Gurley, Jr., Duplan Corp., is devoted to textile processing. Mr. Gurley surveys the textile industry with descriptions of machines—bowls, wash wheels, jigs, J-boxes, etc.—and how wet-process detergency is handled for cotton, wool, and the synthetics. The chapter, and evidently the rest of the book (chapters are included on all the detergency-using industries), is a survey of methods and requirements and not a know-how book.

For more information, write direct or use Reader Service post card.

TORRINGTON NEEDLES

help achieve perfection on the Reiner 75-Gauge Twin-Knitter . . .



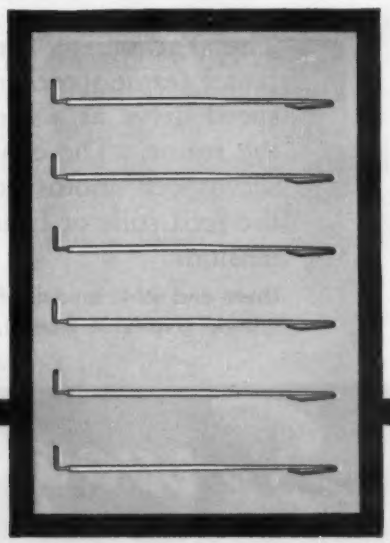
WHERE PRECISION—in needles and parts—is essential. Produced in gauges as high as 75, the Reiner Twin-Knitter is setting outstanding quality records for many of the country's leading knitters of full-fashioned hosiery.

"Because perfection in the knitting elements is so important to the smooth operation of our machines, we equip them with Torrington Needles and parts," says Mr. K. T. Marx of Robert Reiner, Inc. "We find that many of our customers appreciate this detail and continue to use Torrington Needles to help achieve flawless knitting results."

Precision construction, exact temper and smooth finish account for the fact that Torrington Needles are consistently preferred by many machine builders as well as users throughout the world.

Whether you require spring beard or latch needles, you, too, will find that these qualities of Torrington Needles add up to profits . . . through their contribution to smooth machine operation, longer needle life and the production of first-quality merchandise. We invite you to enlist the help and advice of a Torrington Needle expert through a call to your nearest Torrington office.

THE TORRINGTON COMPANY
Torrington, Conn., U. S. A.
Established 1866

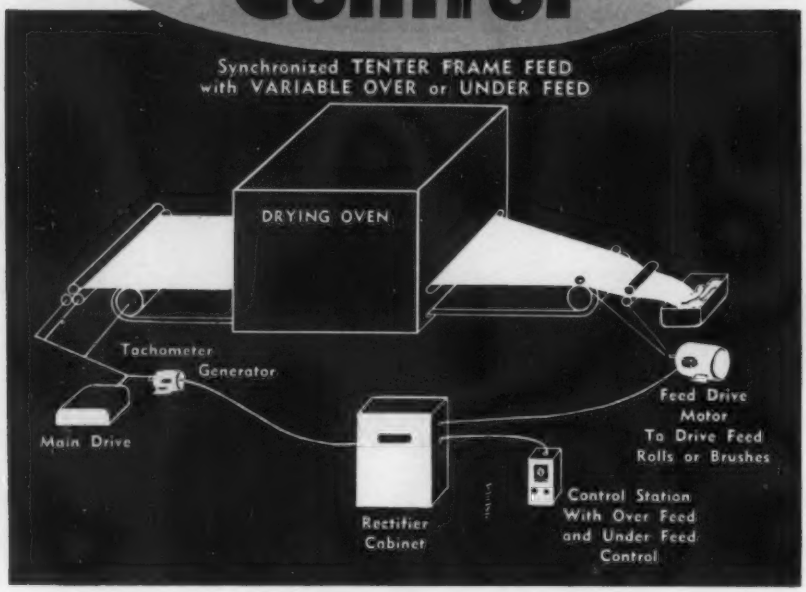


There's a **TORRINGTON NEEDLE**

for every machine . . . for every type of knitting

Servospeed

Tenter Frame Feed Tension Control


Synchronized TENTER FRAME FEED
with VARIABLE OVER or UNDER FEED
DRYING OVEN
Tachometer Generator
Main Drive
Feed Drive Motor To Drive Feed Rolls or Brushes
Rectifier Cabinet
Control Station With Over Feed and Under Feed Control

Here's HOW IT WORKS ...for the Textile Finishing Industry

The Tachometer generator monitors the tenter frame speed and maintains the Servospeed drive at a synchronized speed with the frame. The control station allows the Servospeed motor to over or underdrive the feed rolls or brushes to achieve desired tension.

These and other models of electronic motor speed control systems available from 1/50th to 3 horsepower.

WRITE

Servospeed
DIV. of ELECTRO DEVICES, Inc.
4 Godwin Ave Paterson, N. J.

POINTERS

CONTINUED FROM PAGE 155

Some produce best if complimented, a few if needled. Some are argumentative, some are always docile.

So, knowing your people and weighing the circumstances involved, decide on the form of order most appropriate—the command, the question, or the suggestion.

3. Give the "why" of an order

An order is more likely to produce the right results if the employee knows why he is expected to do something.

You may have heard the story of the laborer whose foreman told him to dig a hole in a vacant lot. As soon as he had dug it, the foreman told him to fill it up and dig another. Again he was told to fill it up and dig another. After he had repeated this frustrating process about eight times, he finally asked, "What's going on? I dig holes, and you tell me to fill them up. What are we doing?"

"Oh, didn't you know?" the foreman replied. "We're trying to locate a water main, and our map's not accurate."

"OK, boss," the laborer said. "Tell me where to dig next. But why didn't you explain before?"

Think a minute. Did you ever get an order and not understand the reason for it? Did you ever give an order when the reason for the order was not clear? All of us, without exception, want to know why we are told to do certain things . We want to know there is a reason for what we do. So make the "why" of your order clear whenever there is a possibility the employee may not understand why.

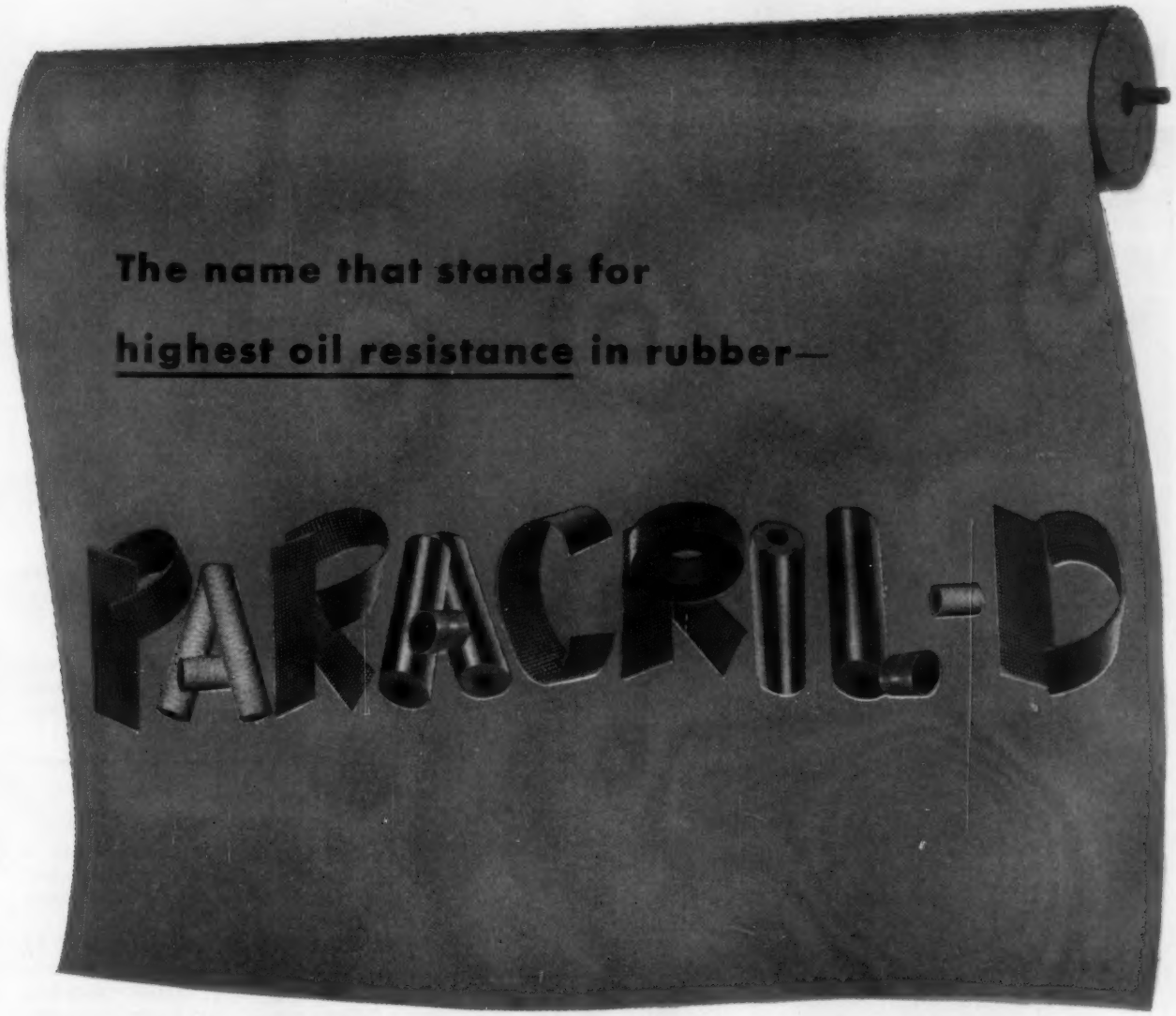
4. Orders must be clear

An order is certainly not transmitted very effectively if it isn't clear. An employee must understand what his instructions mean if he is to carry them out properly.

Too often, orders are vague and subject to misinterpretation. They are sometimes confusing as to when they should be carried out, how they should be carried out, and what results should be expected. Unfortunately, the employee is too frequently the goat when orders are improperly followed, when in fact the blame should be placed on the supervisor who was not clear in his instructions.

5. Follow up your orders

Whenever an order departs from the strict routine of the job, it is



Today's industry uses many products made of rubber. It also uses lots of oils, solvents, and other chemicals that cause ordinary rubbers to soften, swell, and become useless... *but not* PARACRIL® D.

PARACRIL D is the latest and most oil-resistant of the entire PARACRIL family, butadiene acrylonitrile synthetic rubbers produced by Naugatuck. This is the rubber of very high nitrile content which retains good flexibility and excellent processing properties. It also provides good tensile properties and excellent abrasion resistance, as well as unequalled resistance to petroleum and animal oils, esters, aromatic hydrocarbons, and chlorinated organic liquids. All the PARACRILS are *non-discoloring* and *non-staining*.

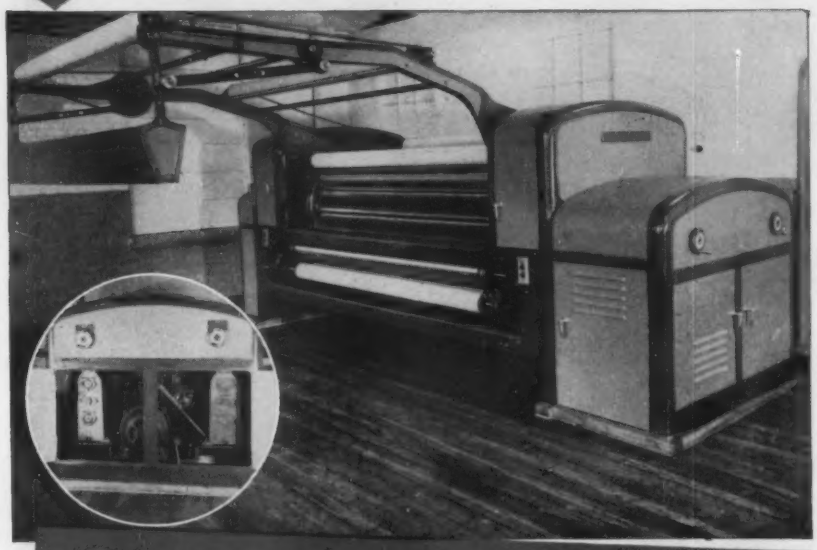
If *you* manufacture or use oil-resistant rubber parts or products, for any purpose, write for the latest data on PARACRIL D today.

Naugatuck Chemical

Division of United States Rubber Company
Naugatuck, Connecticut

BRANCHES: Akron • Boston • Charlotte • Chicago • Los Angeles • Memphis • New York • Philadelphia • IN CANADA: Naugatuck Chemicals, Elmira, Ontario
Rubber Chemicals • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices • Cable Address: Rubexport, N.Y.

Eliminates Trial and Error! Exact duplication of a desired nap at a predetermined speed on subsequent runs of previously finished fabrics is made possible by these two REEVES Transmissions which control the amount of energy supplied to the Pile Rolls of the Davis and Furber Simplex Napper.



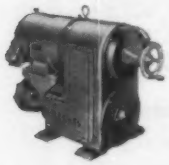
Your machines will produce more at less cost with—

REEVES
Variable Speed Control

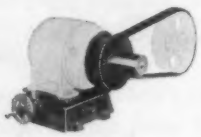
● Whether your production problems involve manual or *automatic operation* . . . REEVES complete line of Variable Speed Drives and Controls will deliver the exact speed required for each operation, each operator, under every changing condition of method or material. REEVES Speed Control is positive and accurate to a fraction of an RPM.

Let a REEVES Speed Control Engineer show you how you can make your machines . . . your operations . . . more efficient, more economical, more profitable—*now!* Write today for complete details. Specify W16a-L.

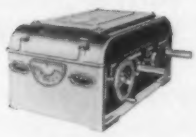
***Only* REEVES offers you a complete line of Variable Speed Drives and Automatic Controls!**



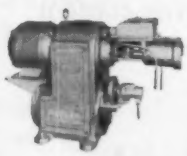
MOTODRIVE combines motor, speed varying mechanism and reduction gears in single, compact unit. Speed variations 2:1 to 6:1. Sizes to 40 hp. Also available in fractional sizes with 10:1 ratio.



VARI-SPEED MOTOR PULLEY converts any constant speed motor to an accurate, variable speed drive with 4:1 ratio. Rugged, dependable—Sizes to 15 hp. VARI-SPEED JR. available for light machinery.



VARIABLE SPEED TRANSMISSION for providing infinite, accurate speed flexibility over a wide range—2:1 to 16:1. Especially adaptable for heavy duty application. Fractional to 87 hp.



AUTO-PNEUMATIC CONTROL with linear output speeds is but one of a complete line of automatic controls designed and engineered to operate your machines more efficiently, more profitably, *automatically.*

REEVES PULLEY COMPANY • COLUMBUS, INDIANA

worth taking the time to check to see if the employee is progressing satisfactorily and is working toward the desired result. It is important to make this follow-up promptly. Don't wait until the employee has completed the assigned task and possibly has gotten off base. Check with him in time to steer him properly before he has wasted time and effort. Give him help if he needs it before the entire job has to be redone. This is not to say, of course, that the employee should be pampered and his hand held at all times. It is to say that a reasonable and prompt follow-up will help you in getting your employees to carry out your orders.

The process of giving orders is another part of the problem of getting along with people. So far, there are no final answers in this very complex art. If you are to lead people effectively, you must give your orders effectively. Some of the considerations outlined here may help you in planning how to give your orders effectively, and to that extent they will help you in your job of getting along with people—or, to put it another way, in your job of leadership.

Spot Inspection

CONTINUED FROM PAGE 133

superintendent. He checks to see if the faults are due to machine troubles or knitter negligence and immediately takes corrective action.

The record of faults discovered by the inspector shows the knitter's number, size, quantity, knitter's menders, looper's number, and looper's menders. The form is handed to the knitting superintendent at the end of each day. The inspector works one shift.

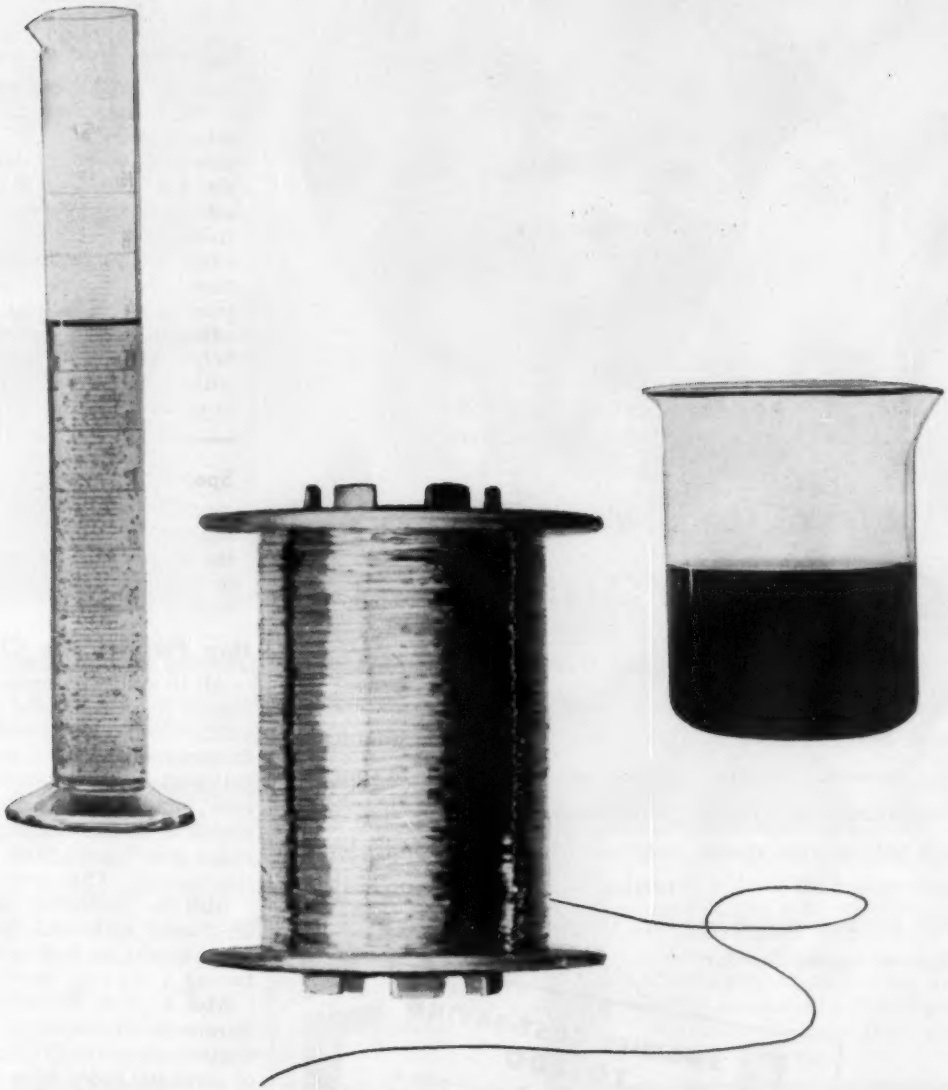
The superintendent checks the form each day. If a worker shows a consistently poor record, then the inspector is instructed to concentrate on that worker's production. The forms are collected at the end of the week and sent to the main office.

The percentage of bad work is calculated for each knitter from the inspector's reports. Then, the percentage is subtracted from the knitter's total production for payroll figures and posted on the knitting-room bulletin board each week.

The average percentage of bad work is totaled each week so that the superintendent can take immediate action if the bad-work percentage increases over a period.

Records show that the system improved quality to a high degree on all styles in the first year of operation and to a lesser degree in the second year. Today, quality remains at a constant high level.

The thread of the story is LUREX®



. . . and it is a colorful story, for color-fastness is part of the performance reputation of Lurex. Our laboratories never cease in their search for the finest and most enduring colors for every end use requirement. Every Lurex yarn produced is precision-checked by **Fade-Ometer** for maximum color stability. For detailed information on Lurex in full color, get in touch with the Dobeckmun representative in your area. Lurex, non-tarnishing metallic yarn made only by the Yarn Division of

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The *Speedweigh* gives you a quick accurate check on package uniformity . . . and has a multitude of general purpose uses as well. 3 sizes—to 5 lb., to 20 lb., to 50 lb.
SERVICE
Factory-Trained
300 Cities
TOLEDO®
HEADQUARTERS FOR SCALES

Better Maintenance

CONTINUED FROM PAGE 112

they're checked to see if they need oil every week.

"Switches and wiring to individual motors are checked once each month. Transformers are checked and the oil is changed once each year.

"In addition to maintenance-department inspections, the overseers and second hands of production departments check electrical equipment once each week."

Replacing Fluorescent Tubes

No mill reporting on fluorescent-lighting maintenance has a system for group replacement of lamps. These mills replace lamps only when they burn out. Three mills, however, inspect lamps once a week. Their methods are:

Mill A—"Fluorescent tubes are inspected weekly and burned-out tubes are replaced. This plan maintains a high-lighting level and is less expensive at our plant than the group-replacement system."

Mill B—"We replace lamps as they burn out and make a thorough check of the lamps each week."

Mill C—"We do not have a planned system of lamp replacement. Most of our lamps are replaced on Monday mornings because the starters and tubes fail to operate when the switch is thrown."

How Fixtures Are Cleaned

All 16 mills who answered the question on fluorescent-light cleaning have systems for keeping the fixtures clean. In some mills, the maintenance department does the work; in other mills, production departments are responsible for the cleaning.

Six mills have definite times to do the cleaning. Their systems are:

Mill A—"Reflectors are wiped off (dry) once each week for 10 weeks. Then they're washed with water containing a cleaning agent."

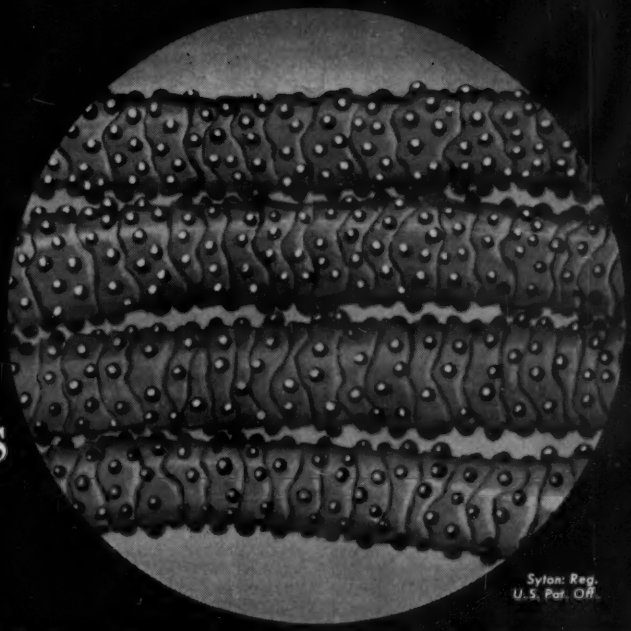
Mill B—"Our fluorescent lights are cleaned by the employees of each production department. The actual time of cleaning varies from one department to another and depends on the need for cleaning. Cleaning schedules vary from one week to one month."

Mill C—"We do not try to clean fluorescent tubes, but reflectors are wiped with a wet cloth once every six weeks."

Mill D—"We have found that the best way to keep fluorescent reflectors clean is to take them down periodically and wash them with soap and water. While the reflectors are down,

For more information, write direct or use Reader Service post card.

How to get finer yarns from coarser stocks with SYTON



Syton: Reg. U.S. Pat. Off.

Millions of submicroscopic particles of Syton increase interfiber drag, hold fibers in place, enable you to spin finer yarns.

Here are more advantages you get with Syton:

- Fast, easy carding—reduces harmful effects of static electricity
- Lighter, finer counts from coarser fibers
- Less twist for the same strength
- Fewer ends down
- More uniform, condensed rovings
- Higher spinning speeds
- Increased tensile strength
- High interfiber drag
- Improved color
- Improves processing of 100% synthetic fibers on woolen systems

Wait a minute! Why not get the full story? It's all in a booklet called "Profitable Spinning of Wool and Wool Blends with Syton"—technical data, illustrations, case histories. Write now to MONSANTO CHEMICAL COMPANY, Inorganic Chemicals Division, 710 North Twelfth Street, St. Louis 1, Missouri.

SYTON is an odorless, translucent, pH-stable silica sol for use alone or with other finishes. It distributes uniformly; requires no special equipment, aftertreatment or curing. It is highly resistant to dry cleaning yet removes easily from stock by mild scouring.

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CHEMICALS — PLASTICS

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How To Save Dollars By Spending Pennies

EPI Bobbin

Every EPI Bobbin is dynamically balanced because experience has shown that materials and methods used in mass production can never be assumed to be perfect. Your own mill methods prove this.

Dynamic testing and balancing costs us—and you—only a few cents per bobbin. But mill records show that sooner or later unbalanced plastic bobbins can cause serious troubles and that *much of the damage is done before the defect becomes noticeable.* Poor wind, uneven packages, and expensive spindle and machine wear cost you many dollars . . . to say nothing about having to discard the bobbin before its time.

You'll save dollars when you specify EPI Bobbins for Nylon and other synthetic fibres.

Stronger, too . . .

ENGINEERED *Plastics*

INCORPORATED

Gibsonville, North Carolina

we touch up any chipped surfaces with paint.

"The frequency of washing depends on the location of the fixtures."

Mill E—"The top surfaces of our reflectors are brushed off once each week.

"We take the reflectors down every six months and wash them in a solution containing 10% caustic soda."

Mill F—"The tubes and reflectors are cleaned once each week in the weave room and less often in other production departments."

Other mills with less-definite schedules say:

"We wash the reflectors and wipe the tubes clean."

"The fixtures are washed periodically by department employees where they're located."

"We keep fixtures clean with overhead blowers; some are cleaned by hand."

"Tubes and reflectors are wiped clean at the same time building ceilings are cleaned."

Cleaning Air-Changing Ducts

Manual cleaning with the aid of compressed air is the basis of all cleaning done to the inside and outside of air-changing ducts in the weave room. Tools used for the work are brushes, rags, whisk brooms, common straw brooms, wooden scrapers, and dry mops. Cleaning agents are soap, water, and a strong bleach. Most mills cover looms near the ducts with cloth while the cleaning is done.

The frequency of outside cleaning ranges from once each day to once each week at most mills. Ducts are cleaned with dry brooms and mops and compressed air. Two mills use soap and water periodically.

Inside cleaning is more difficult. The methods of two mills are:

Mill A—"The inside surface of each duct is cleaned thoroughly every four months. We use wooden scrapers and whisk brooms to remove the lint deposits. We also use compressed air when we find it to be beneficial. All scrapings are dumped out through vent openings."

Mill B—"Inside surfaces are cleaned once a year with brushes and compressed air. Workers crawl through the ducts and loosen dust and lint. The fans are operated at low speed to blow the deposits ahead of the workers as they loosen the deposits."

Maintenance departments are assuming the responsibility for the upkeep of humidifiers. Of 15 mills reporting, the maintenance departments of eight mills maintain all humidification systems. In four mills, each de-

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Proud to be on the Team!

It's teamwork that makes America great. Whether it's a boy learning the value of team spirit in sand-lot baseball or grown-ups working side by side in industry.

Cone Mills employees have always shared the experience of "working together". Their teamwork is our greatest asset and we are proud of our men and women who know it is the keystone to fabrics of the highest quality.

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DWIGHT DIVISION, Alabama City, Ala. • ENO PLANT, Hillsboro, N. C. • MINNEOLA PLANT, Gibsonville, N. C.
CLIFFSIDE PLANT, Cliffside, N. C. • HAYNES PLANT, Avondale, N. C. • SALISBURY PLANT, Salisbury, N. C. • UNION BLEACHERY, Greenville, S. C.
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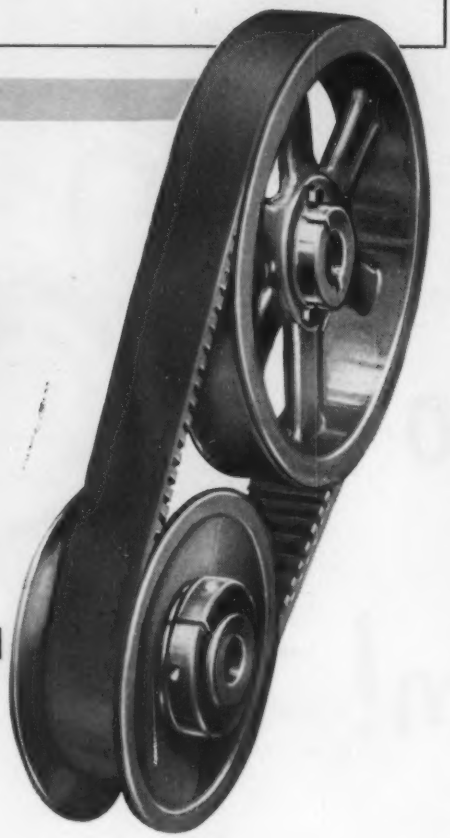
for wide speed range– higher horsepower capacity

SPECIFY *Wood's*

NEW

construction variable speed drive



Here's all you do to change speeds. Loosen both split collars and turn adjusting screw from either end. (Both Flanges move simultaneously.)

Notice that this drive uses a single wide-range belt for maximum HP capacity, thus eliminating the problem of maintaining matched belts and grooves.

Other exclusive features are:

POSITIVE LOCKING—Eliminates fretting corrosion caused by vibration.

WIDE SPEED RANGE—Up to 3 to 1 speed range ratio.

HORSEPOWER RANGE—Improved notched belt construction gives higher horsepower capacity. Range—1 to 20 horsepower motors.

LESS SHAFT OVERHANG—Single belt design reduces weight and space required.

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MORE ECONOMICAL—Will give a variety of speed changes best suited for your product or operation.

Be sure to write for Variable Speed Drive Bulletin #497. Gives complete information on how to design and select variable speed drives from 1 to 20 HP.

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partment looks after its own humidifiers. Three mills have set up special departments to take care of humidification systems.

The major portion of maintenance to humidification systems is cleaning and inspection. Standard cleaning practices are used in all mills giving their methods.

Creeping Deterioration

CONTINUED FROM PAGE 136

pennies and losing dollars. An easy solution is to either turn the ring or have it repolished. When rings are replaced in the rail on the frame, they should be checked to make sure that they are seated securely in the holders and are level in the ring rail, as indicated by a leveling instrument.

Step 7–Spindles

Spindles represent an even larger investment than rings; but, luckily, only parts of spindles generally need replacement, particularly if the spindle is always kept in good condition.

Bolsters are apt to require replacement in large numbers, and often a mill tries to save money by buying cheaper replacements. This practice is, in many cases, another example of poor economy.

A bolster that does not fit the spindle blade correctly will wear out the step of the blade–a much more expensive item. A bolster that does not fit the base in accordance with the original design is apt to cause spindle vibration, and vibration of the spindle causes oil pumping and can lead to an unbalanced package load that will rapidly wear out the spindle blade. A bolster that is not properly made with oil holes and oil grooves will not have the oil circulation needed to prevent wear of the spindle-blade step and top bearing under the whorl.

Step 8–Builder and Traverse

The entire builder and traversing mechanism must be carefully scrutinized for wear. Here again, there are many instances in which the replacement of a small, inexpensive part in time will prevent ruining more-expensive parts. Also, there are certain items that, if used when worn, will cause the mill losses in quality or production that makes the cost of the part insignificant.

Lifter rods that are not straight will bind and interrupt the ring-rail traverse so that bobbins will be poorly built. Crooked lifter rods wear out the bushings in the spindle rail and will then wobble so that the spindle cannot be held in plumb with the ring.

The Pitman roll, a very inexpensive

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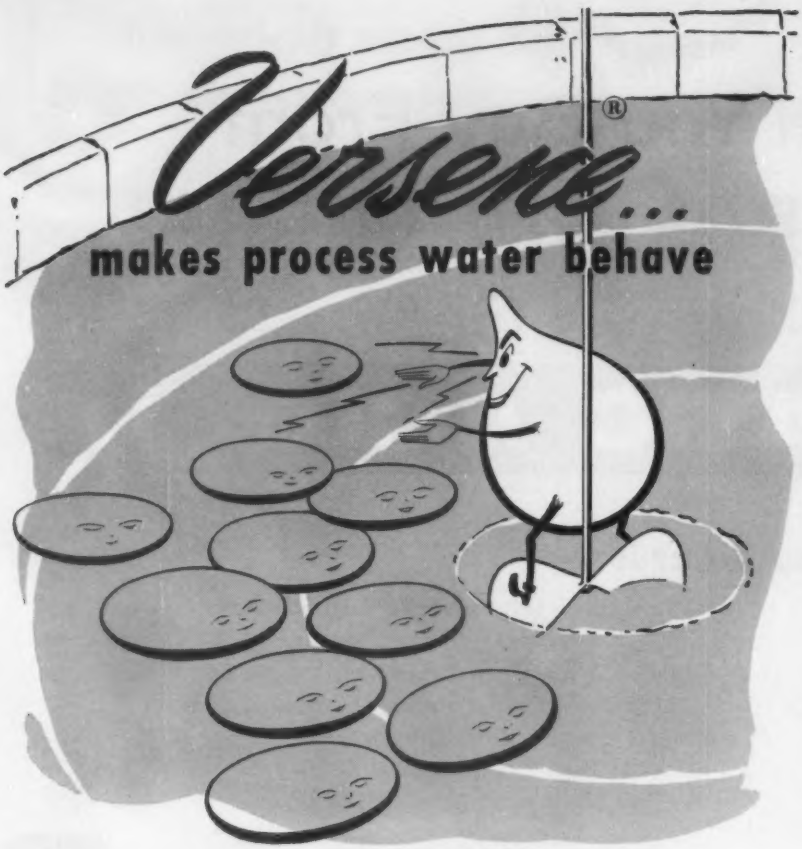

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Few textile plants have access to water so soft that it doesn't interfere with washing, scouring, bleaching, dyeing, finishing or other wet processing operations. This is why all raw process water must be regarded as an *active chemical* until proven otherwise. Versene makes the active ingredients in process water behave and become inert. It completely and permanently softens water without forming precipitates by inactivating any calcium, magnesium, iron, copper, lead or other metal contaminants which may be present.

VERSENE • ECONOMY WITH EFFICIENCY

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VERSENE • A COMPLETE LINE

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item, may develop a flat spot through wear. Such a flat will stop the Pitman roll from rolling in contact with the builder cam. When this condition occurs, the smooth, precise movement of the entire rail-traversing mechanism suffers and, as a result, bobbins will not be correctly formed.

Poorly built bobbins are a serious source of profit loss because of waste created through sloughing of the yarn, excessive bobbin and spindle wear if the package load is unbalanced, and small yarn-package size. And saving a few cents by using an old Pitman roll may cost the loss of the more-expensive hardened-steel builder cam.

While not every part of the frame has been examined here, sufficient examples have been shown to illustrate the point that cutting initial maintenance costs should be carried out only after serious consideration of the effects that may follow. Certainly, good parts should not be scrapped nor is it necessary to check frames too frequently; but adequate preventive maintenance will cost pennies and save dollars.

Spinning Overseer

CONTINUED FROM PAGE 119

tionship between wages and production, if only by an approximate method. He will then be able to judge his own performance.

If every frame has the same number of spindles and if the average numbers spun do not change much from week to week, the ratio between frame hours worked and operator hours paid each week can be compared. Divide the frame hours by the operator hours and compare the figure each week. With other things equal, the higher the figure, the lower the cost. But if there are several different frame sizes in a department, spindle hours worked per operator hour is a more-accurate comparison.

This shows the method:

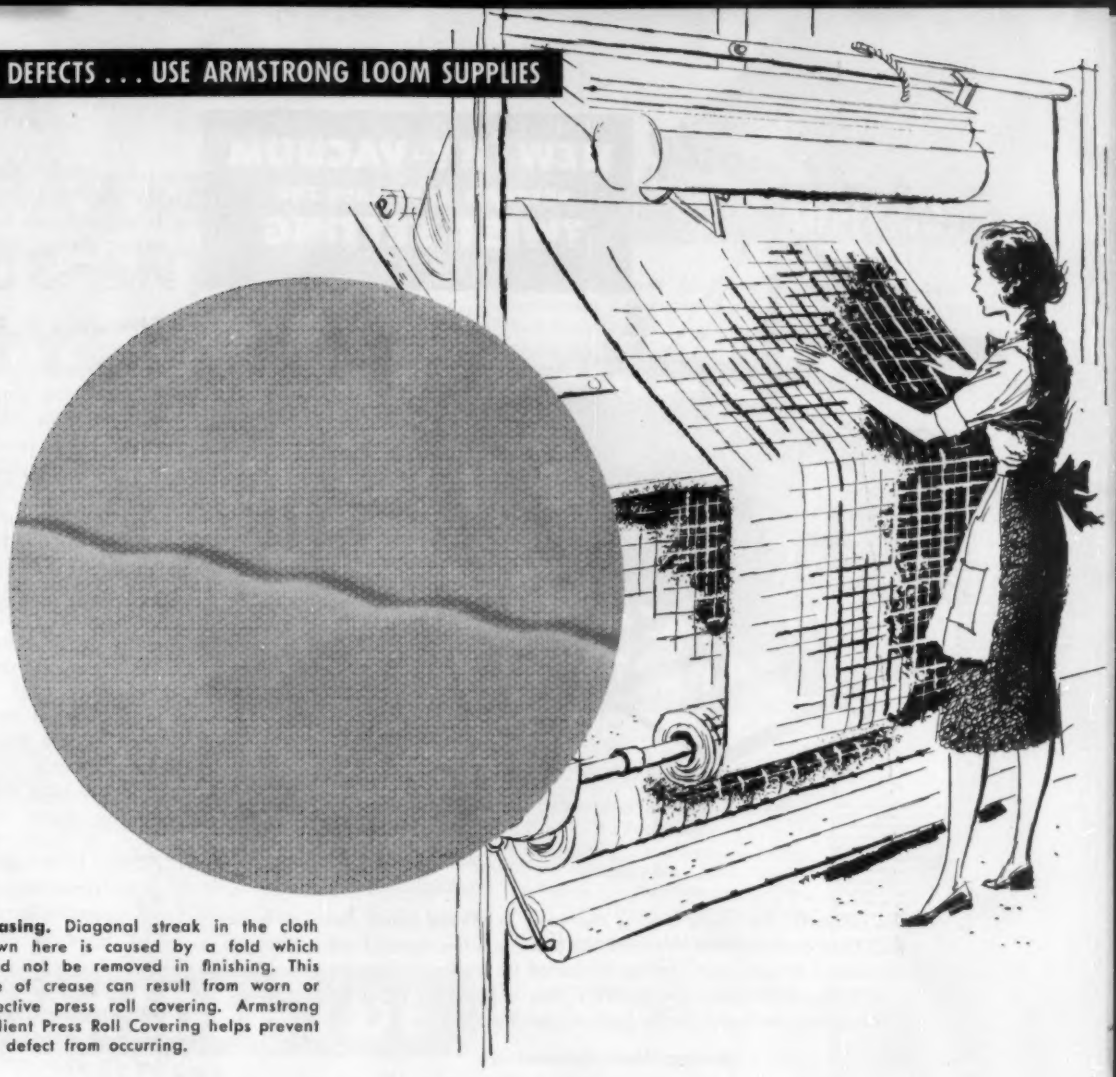
A department contains 124 frames:
24 frames with 400 spindles= 9,600 spindles
40 frames with 320 spindles=12,800 spindles
36 frames with 280 spindles=10,080 spindles
24 frames with 240 spindles= 5,760 spindles

All frames worked 80 hrs. Operator hours worked:
83 operators worked 40 hrs.
12 operators worked 36 hrs.
11 operators worked 32 hrs.

Then the spindle hours per operator hour would be:

$$\frac{80\ (9{,}600+12{,}800+10{,}080+5{,}760)}{(83\times 40)+(12\times 36)+(11\times 32)}=745$$

FOR FEWER FABRIC DEFECTS . . . USE ARMSTRONG LOOM SUPPLIES



Creasing. Diagonal streak in the cloth shown here is caused by a fold which could not be removed in finishing. This type of crease can result from worn or defective press roll covering. Armstrong resilient Press Roll Covering helps prevent this defect from occurring.

Minimize fabric creasing with this resilient press roll covering

Now you can weave even the most delicate synthetics or blends **with less risk of fabric creases!** Specially made Armstrong DK-149 Press Roll Covering offers the permanent resilience needed to help the take-up roll maintain firm, even tension from selvage to selvage.

High-quality DK-149 Covering won't pack down or develop "high spots" because it's made of sponged rubber reinforced with resilient cork. This provides a long-wearing surface that **stays** uniformly resilient.

Non-marking. Armstrong Press Roll Covering helps prevent fabric defects in still another way. Its plain surface never leaves marks or indentations on the goods—yet it has enough friction to hold the fabric firmly and evenly.

For a test of this covering, call your Armstrong man or write direct to Armstrong. And for the free booklet, "Armstrong Textile Roll Coverings and Mill Supplies," write Armstrong Cork Company, Industrial Division, 6903 Dauphin St., Lancaster, Penna.

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LOOM SUPPLIES
. . . used wherever performance counts

Loom Clutch Discs and Inserts . . . made of cork to maintain friction even under oily conditions.

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Take-Up Roll Coverings. A full line in synthetic rubber, cork-and-rubber, plain, or gridded cork.

Temple Roll Coverings. Specify long-wearing Accotex® when you order temple rolls from your regular source of supply.

Gaston County

NEW 'HY-VACUUM'
PRESSURE AUTOCLAVE FOR
TWIST SETTING

Developed primarily for steam setting the twist in Nylon yarns, this new controlled vacuum-pressure system has a definite place in other types of steam processing. Experimental projects now being conducted by leading woolen and worsted mills are showing such remarkable results, it may indicate the replacement of conventional steam box methods, on the basis of quality alone.

THE PROCESS — More Efficient, More Economical

- Start vacuum pump by means of push button, 22" to 25" vacuum is produced in 2 to 3 minutes. Pump stops automatically.
- Steam is injected at controlled temperature for any desired time period. Steam is expelled automatically.
- Automatic controls start pump and vacuum cycle is repeated to remove moisture from vessel.
- Pump stops and vacuum relief valve opens to restore atmospheric conditions inside vessel.

THE ADVANTAGES — Higher Quality, Bigger Profits

- Time saving. Complete process in 30 minutes or less, depending on steam injection cycle required.
- Positive shrinkage. Yarn is shrunk and twist is set *uniformly* from *outside to spool core.*

CUSTOM BUILT to customer specifications in accordance with ASME standards, Gaston County autoclaves can be designed with vessels to fit into existing systems using present pin racks and trucks.

RUGGED CONSTRUCTION, always an outstanding feature of Gaston County beam and package dyeing machines, is even more essential in vacuum vessels. Our engineering staff is eminently qualified by experience to design the best equipment for your requirements.

COMPLETELY AUTOMATIC OR MANUAL machines are available. Whether your requirements are large or small we are equipped to serve you. Please phone, write, or wire for complete details.

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A graph showing week-by-week fluctuations draws attention quickly to appreciable losses, which can easily occur during periods of intermittent operations.

Efficiency Is Relative

The overseer will have to discover the relative importance of machine and operator efficiency to his department, the productive efficiency of frames hasn't the same significance in every plant.

If a spinning room is under pressure to keep subsequent processes operating, machine efficiency is of the highest importance and it must be maintained even at the cost of a little extra expense in the spinning room. The overseer should not be so cost conscious that he will not spend money in his own department to prevent excess expenditure in another department.

If machine efficiency is imperative, doffing gangs can consist of three, four, or more doffers. The rate of doffing in terms of bobbins lifted per doffer hour might be low, but machine efficiency is kept high by preventing lost time in doffing or waiting for doffers.

If the spinning department has a potential surplus production over subsequent processes, machine efficiency can be sacrificed to obtain maximum operator efficiency. Doffers can work as individuals and be given as many frames as they can handle.

In any case, managerial efficiency should be watched carefully; neither operators nor machines should be kept idle waiting for materials or instructions.

Encourage Operators

Nothing is more frustrating than to be permanently employed on a job far below one's capabilities; so even with full-load and well-trained operators, they must be encouraged to maintain an interest in their work.

Operators should be encouraged to study and aspire to more-skilled and better-paid work. Hope is a strong factor in building high morale in a spinning department. By strictly impartial treatment and promotion, the level of aspiration of a whole department is raised; but one or two unjustified promotions can make a department's personnel so apathetic that both quality and production are seriously affected.

Rules and regulations for the conduct of operators should be written in language as simple as possible. In-

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A solid polymer of formaldehyde characterized by an extremely low water content, high assay, low reactivity, low solubility, and high melting point. Useful in syntheses requiring formaldehyde, which are prevented or inhibited by traces of water.

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Fiber drums, 250, 100, 50, 25 lbs.

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Valuable to the synthetic resins industry in the curing of resins. Used as a chemical intermediate and as a hardening agent for casein, glue and other proteins; as a rubber accelerator; for explosives; for fuel tablets; in medicinals. As an amine, it finds use as a neutralizing or deactivating agent.

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Granular . . Multiwall paper bags, 75 lbs.; Fiber drums, 100 lbs.
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Fiber Drums, 100, 50 and 25 lbs.

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Widely used in the production of phenolic, urea, melamine and resorcinol resins; for converting casein, glue and other proteins into plastic products. Increasingly important in manufacture of chemicals and fertilizers. Used in embalming fluids, disinfectants, fumigants, deodorants, and in the leather, fur, paper and textile industries.

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Formaldehyde Solution N.F.

Tank car . . . . . 72,000 lbs.
Tank truck . . . . . 30,000 lbs.
Drums . . . . . 475; 125; 90 lbs.
Carboys . . . . . 100 lbs.

37% Formaldehyde—Methanol Free

Tank cars . . . . 72,000 lbs.
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more and more, the choice of the most successful manufacturers of mens' and womens' knitted outerwear

knitters' choice, too, because no other circular fully automatic knitting machines equal OGA and OTA for simplicity, ease of operation and dependable production of first quality merchandise.

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Jantzen
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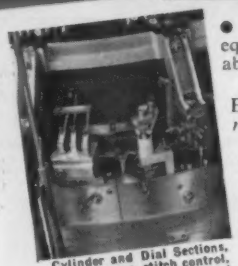
The Puritan Sportswear Corp.
and dozens more of the nation's foremost plants



Cylinder and Dial Sections, turning cams, stitch control, 3 color yarn changer, dial cam operating levers.

● Your safest way to judge knitting equipment is to find out what users say about production and maintenance costs.

Today, ORDNANCE GAUGE EQUIPMENT *outsells all comparable machinery by a substantial margin!*

Comparison proves that ORDNANCE GAUGE machines make possible 20% or more increased production with trouble-free operation and simplicity of operational adjustments. Write at once for catalog and further information.

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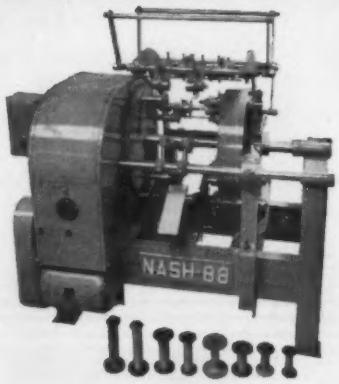
"Neither SPINS Nor WEAVES"

Yet Essential for True QUALITY Production! . . .



This NASH 88 Automatic Bobbin Refinisher produces no yarn or fabric — but it does prevent the defects in spinning or weaving due to rough *bobbins.*

HOW IT FUNCTIONS . . . The NASH 88 refinishes throwing and twisting bobbins at the rate of ten pieces per minute. It provides controlled abrasive action on the barrel, inside flanges, and over top radius of flanges. Burnishes inside surface and top radius of fibre flanges. Removal of all roughness prevents tearing of filaments from rough bobbins. Cleans as well as refinishes.

SPECIAL FINISHING MACHINES NASH SINCE 1890

J. M. NASH Company
2364 N. 30th Street • Milwaukee 10, Wisconsin

structions are no good unless they are clearly understood, and it's no use issuing an avalanche of information all at once in the hope that results will quickly show.

A new regulation should be given sufficient time to be completely understood before another regulation is introduced. And rules should be kept to a minimum. Learning more and more new rules seems to rub out knowledge of previous rules. It is much wiser, and certainly more efficient, to stick to essentials in making regulations.

Mixing Top

CONTINUED FROM PAGE 111

The supervisor figures out the mixing pattern, draft, and production gears and keeps a record of the work.

Before a batch is released to the drawing room, a representative sample is drawn and submitted to the color matcher for final approval.

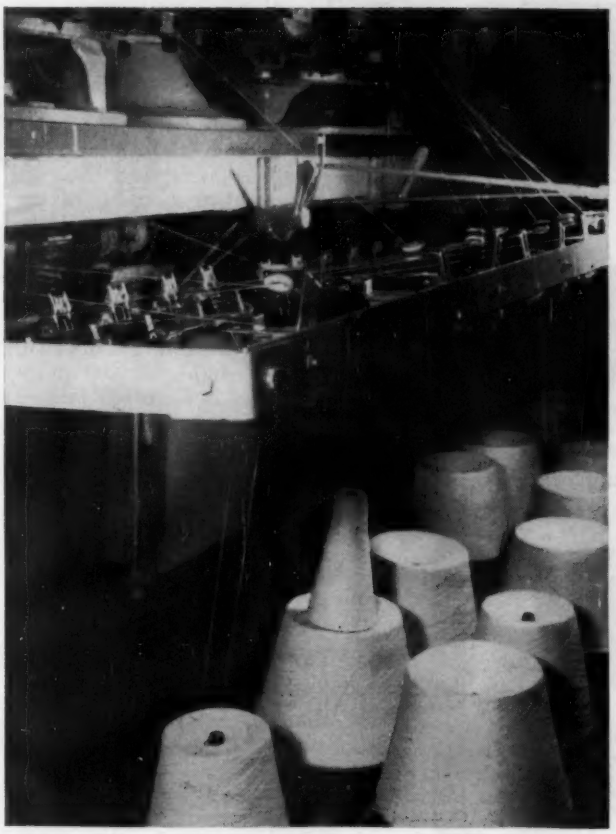
Production depends on the size of the batch and how fast the batch is needed; a 5,000-lb. batch might be assigned to one machine or to five machines. Melanger output is 25 to 30 yds. per min., but production is better figured per 8 hrs. Small lots cause a lot of wasted time, and production is smaller; and at any rate, accurate mixing is considered more important than production figures. Total melanger production is about 2,000 lbs. per three-shift day.

Maintenance Is Small

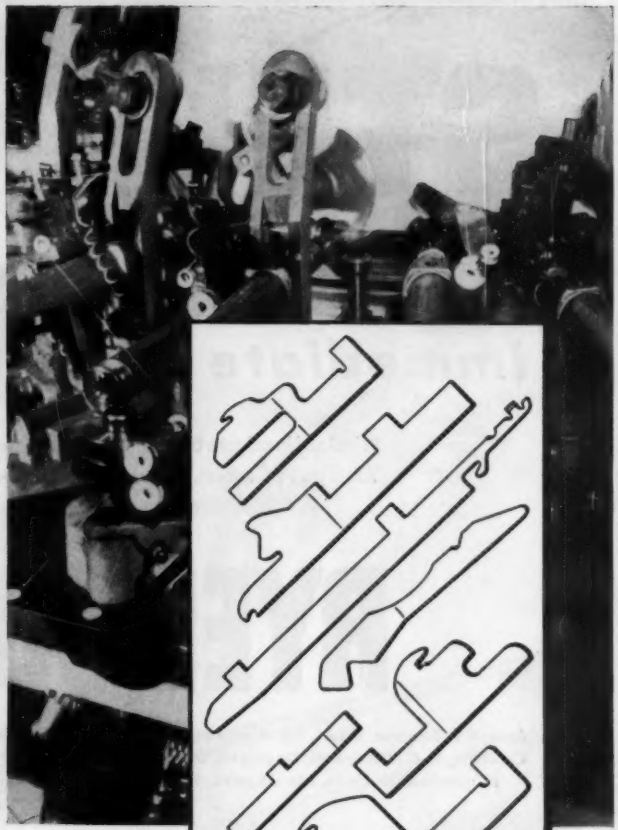
The melangers in this mill have been in use for about 25 years. The machines have been overhauled four times; cams last about five years. A 16 pinning with 98 pins per faller is used, with 600 to 650 faller drops per minute.

The melangers have proved to be rugged equipment. Oiling takes about 5 mins. a day for each machine. Adjustments are made by the supervisors, and the maintenance shop is called as required. A spare head is kept on hand for immediate replacement, and repaired heads are checked out at 1,000 drops per minute by the maintenance shop.

Cleaning depends on the degree of the color change. Ordinarily, with a narrow color change, rolls, aprons, and fallers can be cleaned with little contamination of the new stock. With wider color changes, extra cleaning is required; and with a change from dark to pastel or white, the faller bars are replaced.

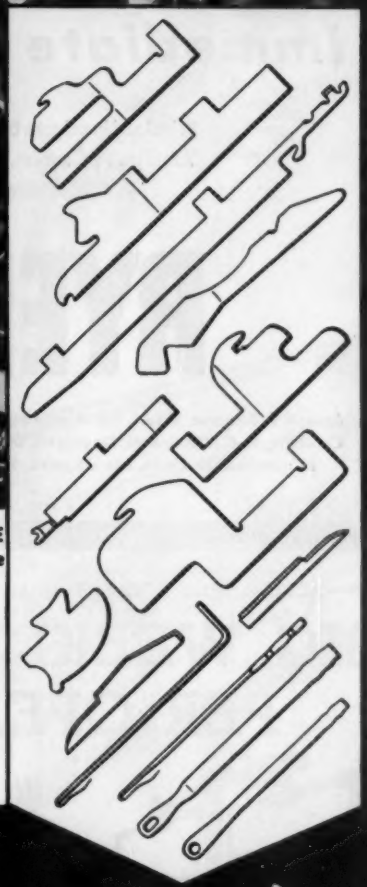


YARN BALLOON is kept large, but yarn is kept off the floor by a low rack under the stop-motion brackets. The yarn path is about 8 ft. long.



FURNISHING WHEE… are opened until the …heels …in.

How Griffin Knits FLEECE WITHOUT FAULTS



Ives Helped!

Here's a story so interesting Textile World made it an editorial report. The use of IVES precision made needles, specially hardened and tempered from more durable vanadium steel, helped make this editorial possible. Your machines will produce better fabric too at lower cost when equipped with IVES needles and parts for circular and tricot knitting machines. Let IVES help YOU increase profits. Write or wire.

THE LOYAL T. IVES COMPANY, INC.
NEW BRUNSWICK, N. J.

► **Electric stop motions, furnishing wheels, … spring-needle knitting machines improve q… breakage**

By **JAMES H. BLORE,** Assistant Editor, TEXT…

CHECKING ON FABRIC QUALITY recently, Griffin Knitting Mills, Inc., Griffin, Ga., discovered that 56 doz. heavyweight fleece garments were laid up without a fault in the cloth. A check on needle breakage showed that two needles were broken in one week on the seven new Tompkins D-2 machines that knit the fleece fabric.

The mill knits double-plush fleece from … and … rotate… chines … head is equip…

Low Rack Keeps Balloon Large

Press-offs are rare at Griffin because good yarns are used and the yarn path from the cone to the furnishing wheels … …nes and to the furnishing wheels.

The porcelains are adjusted so that the yarn rubs on no rough surfaces. The stop-motion tension adjustments

 For more information, write direct or use Reader Service post card.

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Every kind in stock

Immediate shipment

Principal Products: Bars, Structurals, Plates, Sheets, Tubing . . . Carbon, Alloy and Stainless Steels, Machinery and Tools, etc.

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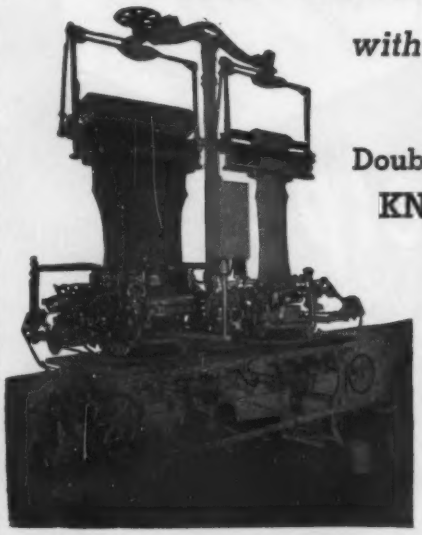
Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Charlotte, N. C., Cincinnati, Cleveland, Detroit, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco, Spokane, Seattle

ACTUAL MILL OPERATIONS SHOW

BIG WEEKLY SAVING PER OPERATOR



with installation of NEW

TOMPKINS D-2

Double Head Spring Needle

KNITTING MACHINE

New stop motions and furnishing wheels provide the profitable answer to reducing cloth imperfections and needle breakage—imperfections are caught before they get into the cloth! Actual installations are showing remarkable savings in knitting various types of material. SOME MILLS CLAIM THEY HAVE CUT PRODUCTION COSTS IN HALF . . . OTHERS REPORT SAVINGS UP TO $600.00 PER WEEK PER OPERATOR, over old machines. All this PLUS AN IMPROVEMENT IN FABRIC QUALITY!

WRITE OR PHONE FOR COMPLETE INFORMATION

LET US SHOW YOU THIS MONEY-MAKING MACHINE IN PRODUCTION

OTHER TOMPKINS MACHINES

BEEF BAG KNITTER | HOCKEY CAP KNITTER | MULTIPLE FEED KNITTER

TOMPKINS BROS. CO. • Syracuse 4, N. Y.

Mercerization

CONTINUED FROM PAGE 113

sure positive control of the concentration.

Caustic is supplied at 50% concentration and is diluted, usually to 19%, by the Foxboro instrument. Because of the comparative shortness of the range (the mercerizer has a 50-ft. tenter), the padded material is skied over dry cans to allow the caustic to act on the cloth.

An indicator and recorder note cloth speeds, which range from 30 to 150 yds. per min. Caustic at approximately 7% is reclaimed for use in kiers, boil-off, and chemic.

Tangled Warps

CONTINUED FROM PAGE 121

the shuttle, and to other loom parts if the shuttle is thrown from the warp shed.

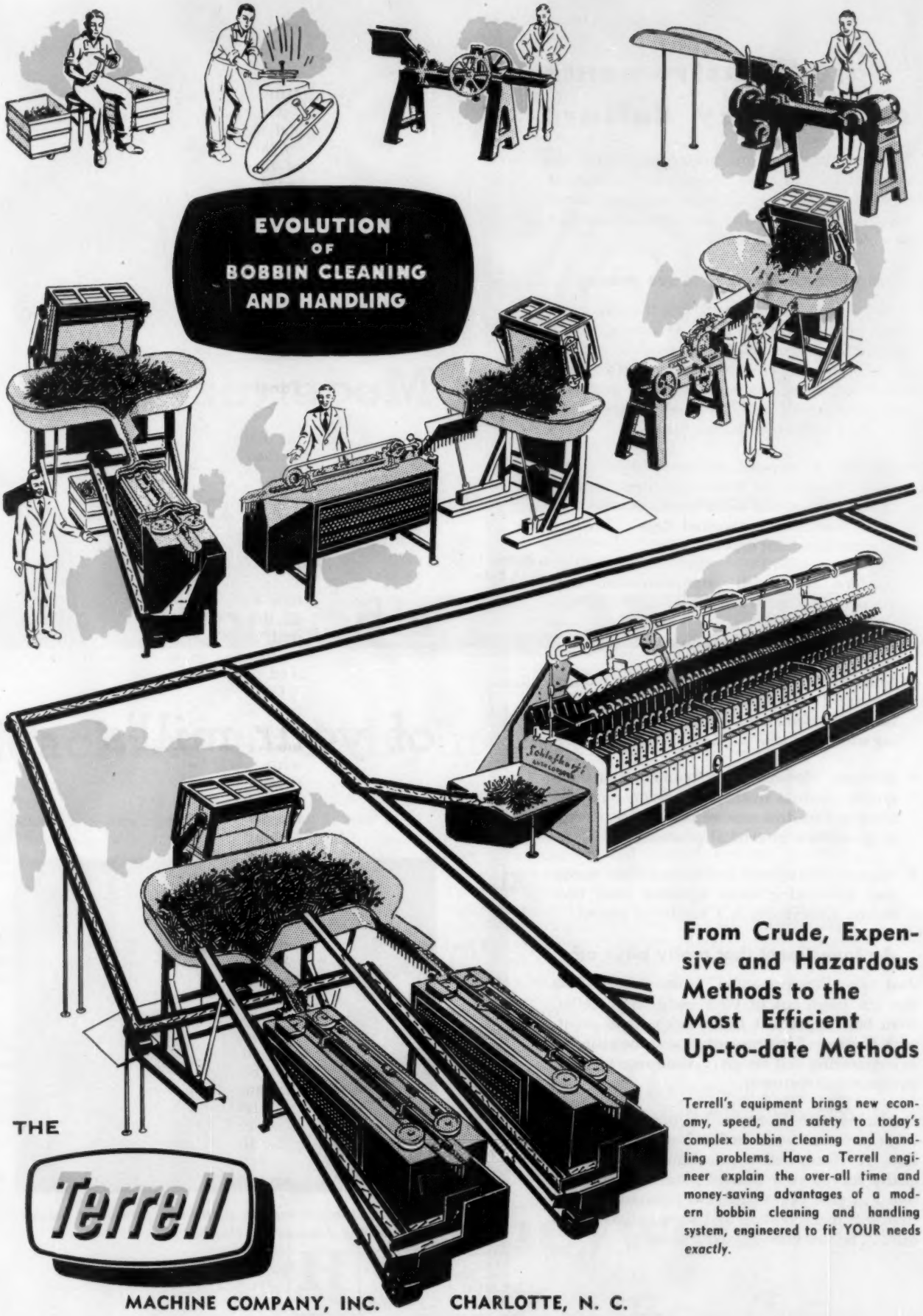
Shed Tangles Are the Worst

Most shed tangles are more severe than other types of tangles and generally cause major defects in the cloth. These tangles last only a short time because they place great strain on the warp ends at the shed and reed, and a warp break-out is made or the shuttle is thrown from the shed.

Observant weavers can prevent almost all tangle defects in the cloth. To prevent the tangles, the weaver must constantly patrol the back or warp alleys, keep the warp ends straight, dispose of extra warp ends, watch for slubs and large knots, keep the selvage ends straight, and pick or brush all loose lint from the warp yarn. The weaver should also keep the harness frames and handrails clean unless this job is done by a special cleaning employee.

Many tangle defects can be picked out of the cloth at the loom, but minor defects remain. No matter how carefully the pick-out hand restarts the loom, a thick or thin place or a set mark will appear in the cloth. In addition, during the picking-out process and subsequent reweaving, the yarn fibers are raised and the strip of cloth has a different appearance. This frayed place is particularly noticeable after the cloth is finished because the ends with the raised fibers absorb more dye than undamaged ends. Another disadvantage in picking out tangles is that the yarn will be soiled and make a blemish in the cloth.

But tangles cannot always be attributed to careless weaving. If too many other duties take up a weaver's time, he cannot patrol the alleys prop-



THE

Terrell

MACHINE COMPANY, INC. CHARLOTTE, N. C.

From Crude, Expensive and Hazardous Methods to the Most Efficient Up-to-date Methods

Terrell's equipment brings new economy, speed, and safety to today's complex bobbin cleaning and handling problems. Have a Terrell engineer explain the over-all time and money-saving advantages of a modern bobbin cleaning and handling system, engineered to fit YOUR needs *exactly*.

"Dated" instruments drain away dollars

Instruments can become outmoded . . . just like automobiles and ideas. Progressive instrument development is constantly making many older designs obsolete . . . and such obsolescence can be a steady drain on profits.

Modern instruments save money

Honeywell engineers are proving this fact every day—in a growing number of plants, on all types of processes. Where out-of-date controls have been replaced by modern Honeywell instrumentation, economy-minded engineers and management men have really opened their eyes. And with good reason, for—

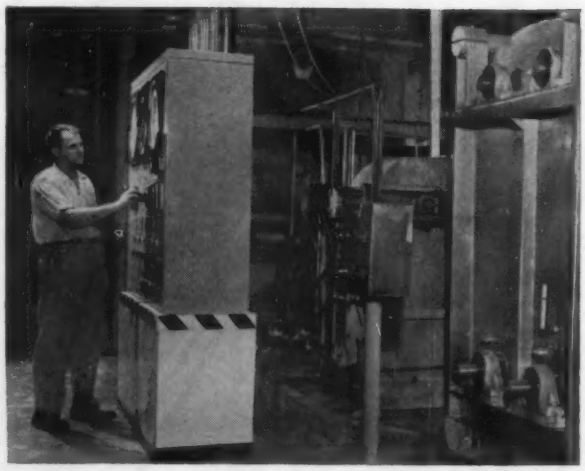
- Modern Honeywell instrumentation saves labor. Centralized control, automatic time-cycle systems, and other recent control concepts save countless wasted steps . . . reduce routine man-hour expenditures.
- Modern Honeywell instrumentation cuts maintenance costs. It affords longer, uninterrupted operation . . . is designed for easy service . . . requires minimum attention.
- Modern Honeywell instrumentation reduces rejects. It maintains the tighter process tolerances demanded by today's more exacting specifications.
- Modern Honeywell instrumentation improves product quality. Precision measurement and control remove any chance of error or guesswork in critical processes.
- Modern Honeywell instrumentation makes cost accounting more accurate than ever before. Everything is a matter of record.

An investment that really pays off

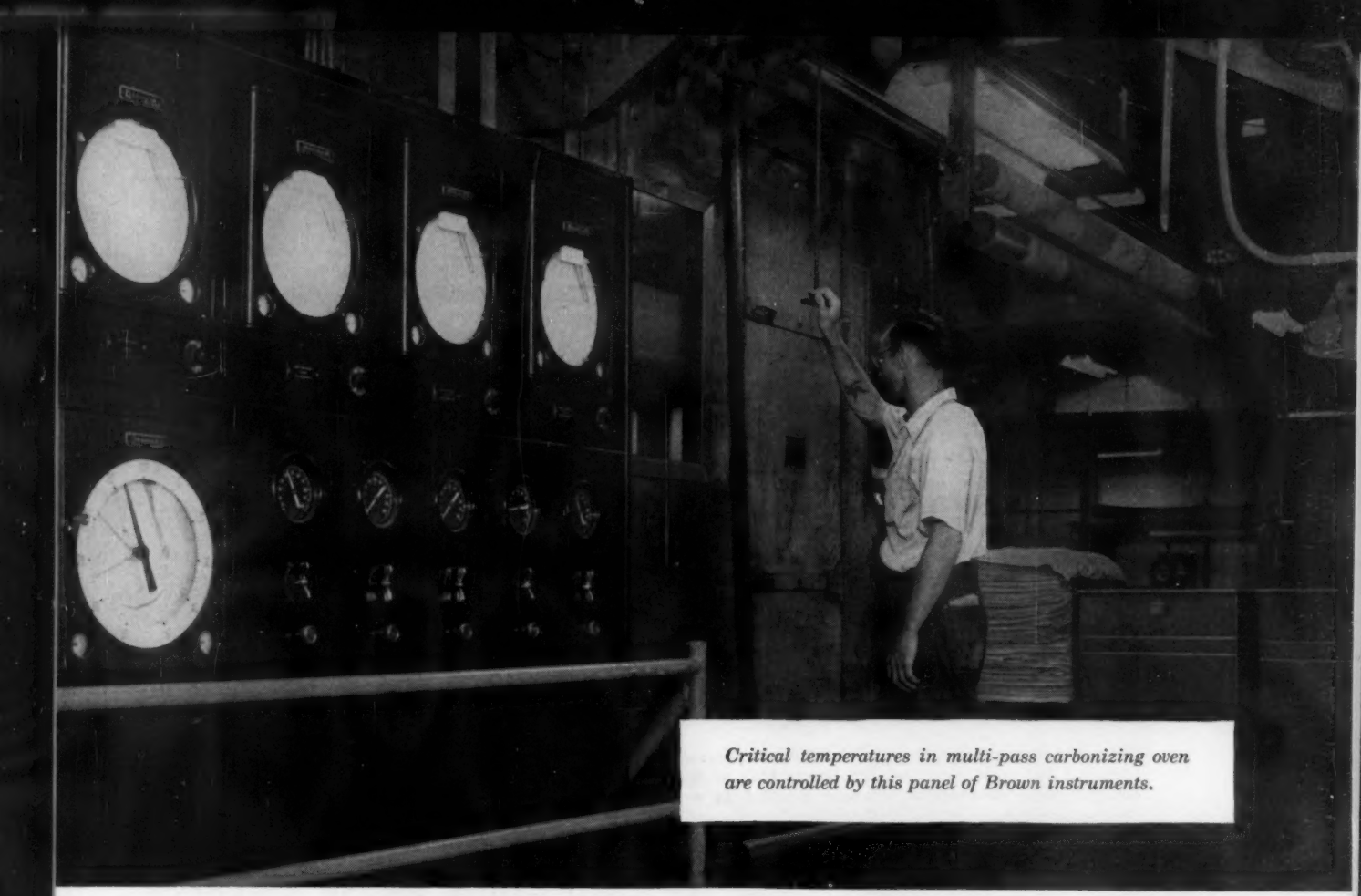
Just being "instrumented" is not enough. You can get more out of your instrument dollar, from both a product and service stand point, with Honeywell instrumentation...the ultimate in engineering and design . . . insurance for your equipment investment.

Replacing with Honeywell is one of the best ways to invest your modernization appropriation. A Honeywell application engineer will gladly survey your present plant instrumentation . . . give you a practical recommendation that will make dollars and sense. Give him a call . . . he's as near as your phone.

Modernized control boosts efficiency of your mill's



Brown instrument cubicle centralizes control of washer, saturator and J-box in this bleachery.



Critical temperatures in multi-pass carbonizing oven are controlled by this panel of Brown instruments.

bleaching and drying processes

ONE of the most profitable ways to invest in modernization in your mill is to install up-to-date Brown instruments for controlling critical processes.

Wherever you use heat for drying, for example, Brown temperature control instrumentation can pay dividends in several ways. In loop dryers, stock dryers, tenter housing, curing ovens and calender stacks, more accurate control of temperature saves steam, fuel or electricity . . . eliminates fabric defects . . . safeguards quality.

Similarly, your bleach range offers opportunities for substantial economies through improved, automatic control: Brown instrumentation simplifies the coordination of vital variables in J-boxes, washers, saturators to make possible the best bleaching results at the most economical rate.

The extensive line of Brown instruments encompasses an unequalled selection of sensing elements, instrument models and control systems covering literally any requirements for textile process control. To utilize these modern controls most effectively, the experience which Brown specialists have gained in many years of experience in the textile field stands ready to serve you. Complete, integrated systems are engineered to the individual requirements of your mill and your processing equipment.

For a discussion of ways your mill can modernize for greater efficiency with today's control techniques, call your local Honeywell sales engineer. He's as near to you as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, Wayne and Windrim Avenues, Philadelphia 44, Pa.

● **REFERENCE DATA: Write for Composite Catalog No. 5002, and for Data Sheets on specific Textile Processing Applications.**

MINNEAPOLIS
Honeywell
BROWN INSTRUMENTS
First in Controls

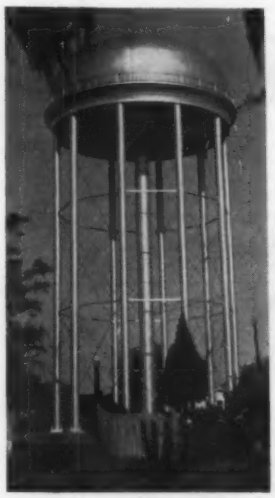
Guard your goods with these protective, economical Bemis coverings...

Laminated Yardage, Laminated Sheets, Laminated Tubing, Laminated Bale Caps	Durable burlap laminated with a waterproof adhesive to heavy creped kraft paper or other linings . . . a really tough, serviceable protection.
Tite-Fit Tubing	The spiral-sewn burlap tubing with 2-way stretch; sturdy, economical, fast to use.
Paper Rug Covers	This double-wall tubing enables rug manufacturers to cut packaging time as much as 50 percent.
Burlap Piece Goods	Mixed carloads of burlap piece goods in a wide assortment of widths and lengths are available.

Write for complete information about Bemis protective covering for bales and rolls . . . or ask the Bemis Man to help you work out the most economical, efficient solution to your problem.

Bemis BEMIS BRO BAG CO. **111 No. 4th St., Box 32 St. Louis 2, Missouri**

TANKS AND VESSELS FOR THE TEXTILE INDUSTRY



● COLE builds elevated tanks and vessels to your specifications — dye-vats, kiers, starch-kettles, acid tanks, jib-boxes, or other processing vessels for the finishing and dyeing industry . . . in stainless steel, nickel-clad steel, or of standard steel lined with Monel metal.

Our long experience in the design and fabrication of vessels for the textile industry may be of help to you. Write for latest COLE catalog—*Tank Talk.*

Established 1854

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- TANKS
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- STANDPIPES

erly to watch for tangles. If the warp yarn is kept clean and straight through all the yarn-preparation processes and slubs, gouts, and large knots are kept to a minimum, the weaver can do a good job in weaving first-quality cloth.

On the other hand, if the yarn is so bad that the weaver must constantly look for imperfections and remove them, his tours of inspection become farther apart because he spends a great portion of his time straightening out the warps. Finally, the tangles form faster than they can be removed; and when this happens, quality, quantity, and employee morale all take a nose dive.

Equipment & Supply News

CONTINUED FROM PAGE 164

Tension Control

A new backstand controls both tension and edge position of a moving web as it is fed to a rewinder or finishing machine. Tension can be maintained at any selected value up to 4 lbs. per in. within 5% at any steady web speed. Edge position is maintained within 0.015 in. with a run-out of ±3 ins. from center position.

The backstand operates at speeds up to 1,200 ft. per min., and the larger model will accommodate a 2,000-lb. roll 54 ins. in width and 48 ins. in diameter. Accurate control is maintained down to a 3-in. core. Maker: Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill. **(T-18)**

Pop-Up Viewer

An advertising folder that contains a small magnifying glass for viewing fabric samples, which are mounted on a pop-up section under the lens, have been developed by Brownie Mfg. Co., 55 Frankfort St., New York 38, N. Y. Sales information can be printed on the folder. **(T-19)**

Dual-Purpose Stacker

For operations where both a platform and forks are required, Lewis-Shepard Products, Inc., Watertown, Mass., has developed an electro-hydraulic stacker with a platform that can be slipped easily over the forks. The lifting height is 58 ins.; lifting speed is 25 ft. per min. **(T-20)**

Floor-Patching Material

Magic Floor NF-161 is a ready-mixed, plastic, non-asphaltic flooring material for patching wood and concrete floors, inside and outside. It eliminates mixing, troweling, and drying time; the maker: Ranco Industrial Products Corp., 13,311 Union Ave., Cleveland 20, Ohio. **(T-21)**

CONTINUED ON PAGE 220

Out with LINT-FLY and TRASH.. from your SPINNING FRAMES and ROVING FRAMES

DO IT QUICKLY, ECONOMICALLY

with the Amazing

M-B AMOSKEAG PNEUMATIC ROLL PICKER

MODEL A-VT-A

A pneumatic tool especially designed for the specific purpose of REMOVING LINT and FLY from the top rolls of Spinning Frames and Roving Frames. Saves time and does a better job by substituting mechanical cleaning instead of laborious hand methods. Air deflector prevents fly and lint being blown into yarn when spinning. Adjustable valve permits any desired spindle speed.

KEEP YOUR AIR LINES FREE of WATER-DIRT and SLUDGE

KEEP AIR DRY AT ALL TIMES
USE THIS AMAZING COMBINATION
AND GUARD YOUR PNEUMATIC SYSTEM

M-B AUTOMATIC WHIRL-A-WAY AIR LINE FILTER MODEL W-1

RIBBON TYPE FILTERING UNIT removes solids .00039 and larger. Transparent plastic bowl makes filtered foreign matter visible. Gives maximum protection to all types of Lint Blowers, Blow-off Hoses and various air-operated controls.

M-B AUTOMATIC AIR TRAP

Ejects water automatically. Operates upon accumulation of 3 to 4 ounces. Discharges in less than 5 seconds. Assures dry air in pneumatic system at all times. Non-corrosive throughout. Weighs less than 5 pounds.

WRITE FOR LITERATURE

M-B PRODUCTS
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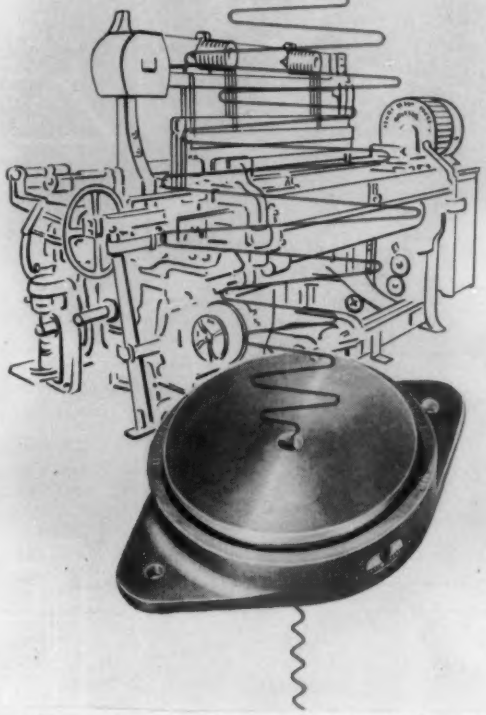
Why live with loom VIBRATION?



The unique deflection principle of Silentbloc rubber-in-metal mounts can make loom vibration a thing of the past. Just four units will convert the noisiest loom ever made into a smooth-running, exceptionally quiet machine.

For catalog and details of our free trial plan on Silentbloc rolling joint mounts write to The General Tire & Rubber Company, Industrial Products Division, Dpt. G-1, Wabash, Indiana.

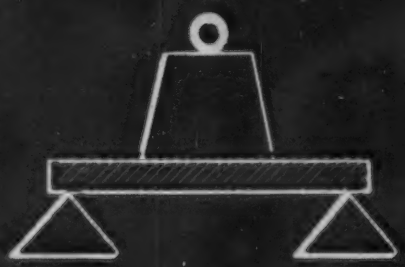
"From Plans to Products in Plastics and Rubber"

These are General Tire Industrial Products now serving Industry

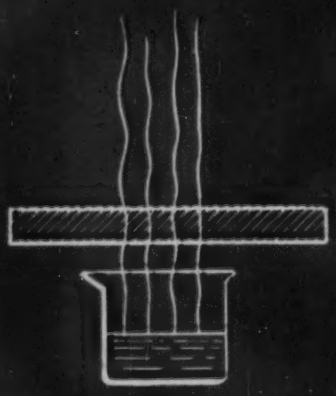
Silentbloc vibration and shock mountings · Silentbloc bushings · Silentbloc bearings · Oil & hydraulic seals · Bonded to metal rubber parts · Hydraulic brake parts · Metal stampings · Extruded & molded rubber · Extruded plastic · Polyester glass laminates · Sponge rubber · Glass run channel · Vibrex® fastners

THE GENERAL TIRE
Industrial Products Division
WABASH INDIANA

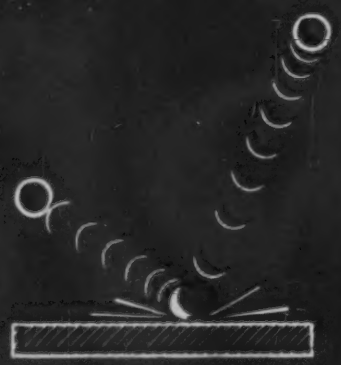
LIGHT
WEIGHT



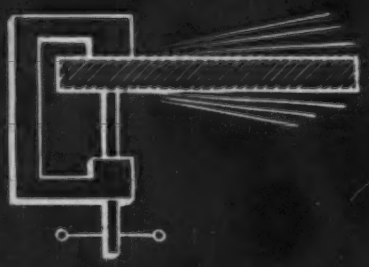
UNUSUAL
STRENGTH



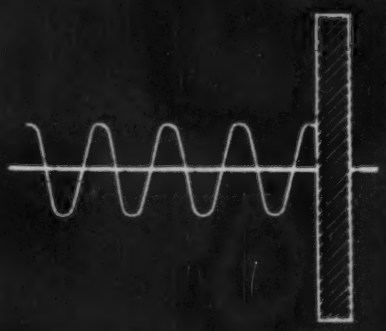
RESISTANCE TO
CORROSION



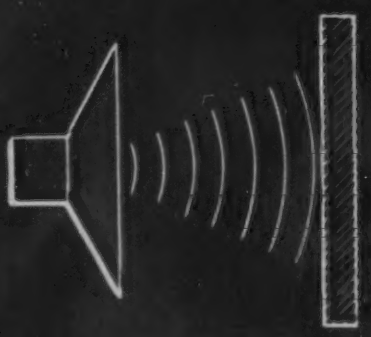
RESISTANCE TO
IMPACT



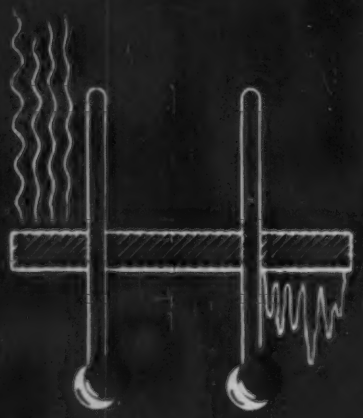
WITHSTANDS
VIBRATION



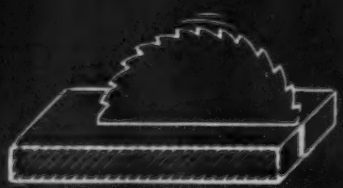
GOOD
INSULATOR



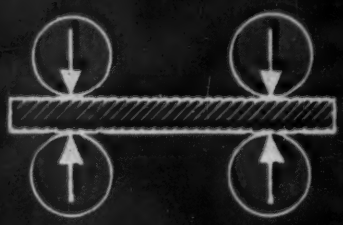
REDUCES
NOISE



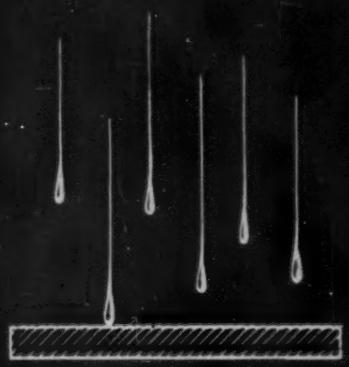
RESISTANCE TO
TEMPERATURE EXTREMES



FABRICATES EASILY,
ACCURATELY



RESISTANCE TO COMPRESSION



RESISTANCE TO MOISTURE

WEARS SLOWLY, EVENLY

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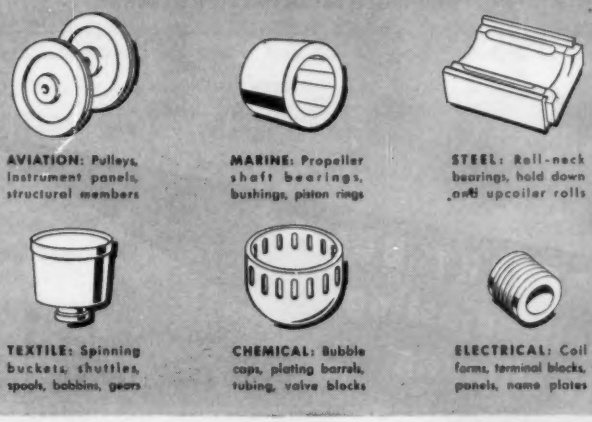

AVIATION: Pulleys, instrument panels, structural members

MARINE: Propeller shaft bearings, bushings, piston rings

STEEL: Roll-neck bearings, hold down and upcoiler rolls

TEXTILE: Spinning buckets, shuttles, spools, bobbins, gears

CHEMICAL: Bubble caps, plating barrels, tubing, valve blocks

ELECTRICAL: Coil forms, terminal blocks, panels, name plates

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Micarta Division
Trafford, Pa.

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• You need a fence if your property lacks protection against common hazards. And you certainly want time-tested quality in the safeguard you provide. Whether you choose heavily galvanized Copper-Bearing Steel, corrosion-resisting Aluminum, or long-lasting Stainless Steel, PAGE Fence is quality controlled from raw metal to rugged fence erected on metal posts deep-set in concrete. Available are 8 basic styles, varied by heights, types of gates, top rails, and barbed wire strands for added security. Finally, your PAGE Fence will be expertly erected by a reliable, technically trained firm. For important fence data and name of nearest PAGE firm—

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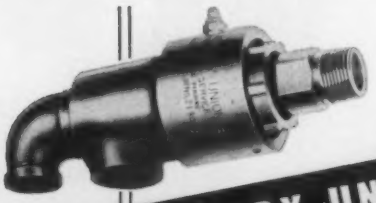
PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE COMPANY, INC.



TYPE "S"
ROTARY UNION

The ROTARY UNION* is self-adjusting self-aligning

Now designed for Field Repair

The ROTARY UNION has a precision mechanical seal which uses neither packings nor springs. It is so designed that the pressure is automatically adjusted to fluctuations in the fluid pressure of the application.

ROTARY UNION construction automatically compensates for any misalignment . . . such as due to worn threads on machine adaptors. This takes all stress and strain from moving and sealing parts and accounts for the phenomenally long service given by the ROTARY UNION on slashers, dry cans, calenders, embossers, and on printing and coating machines.

For full information contact our nearest office or write Dept. 3W for our Bulletin 700.

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Air Filter

A filter designed for a low pressure drop for industrial ventilating and air-conditioning systems has been announced by Cambridge Filter Corp., Syracuse, N. Y. Three interchangeable cartridges, with different filters providing 95, 85, or 35% efficiency, are available. Capacities: 125 to 1,000 cu. ft. per min. (T-22)

Millivoltmeter

An indicating millivoltmeter that features a short response time and high accuracy has been announced by The Bristol Co., Waterbury, Conn. The instrument has a new high-torque, jeweled mechanism. Accuracy: 1% of full scale. Uses: pyrometer, tachometer, pH indicators. (T-23)

Thermostatic Control

A new thermostatic pilot controller has been developed by Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Box 400, Knoxville, Tenn. It provides temperature control of liquids or air when used in conjunction with valves, dampers, and other controls. It is useful on dyeing and bleaching machinery and instantaneous water heaters. (T-24)

Pressure Valve

A nonferrous, pressure-operated Hydra-Matic valve for handling air, gases, water, oil, and other liquids is available from Telsco Fitting Div., 5422 Redfield St., Dallas, Tex. Pilot valves can be hand-operated, or the solenoid type can be connected to a time clock or other signaling device. Sizes: 1 to 3 ins. (T-25)

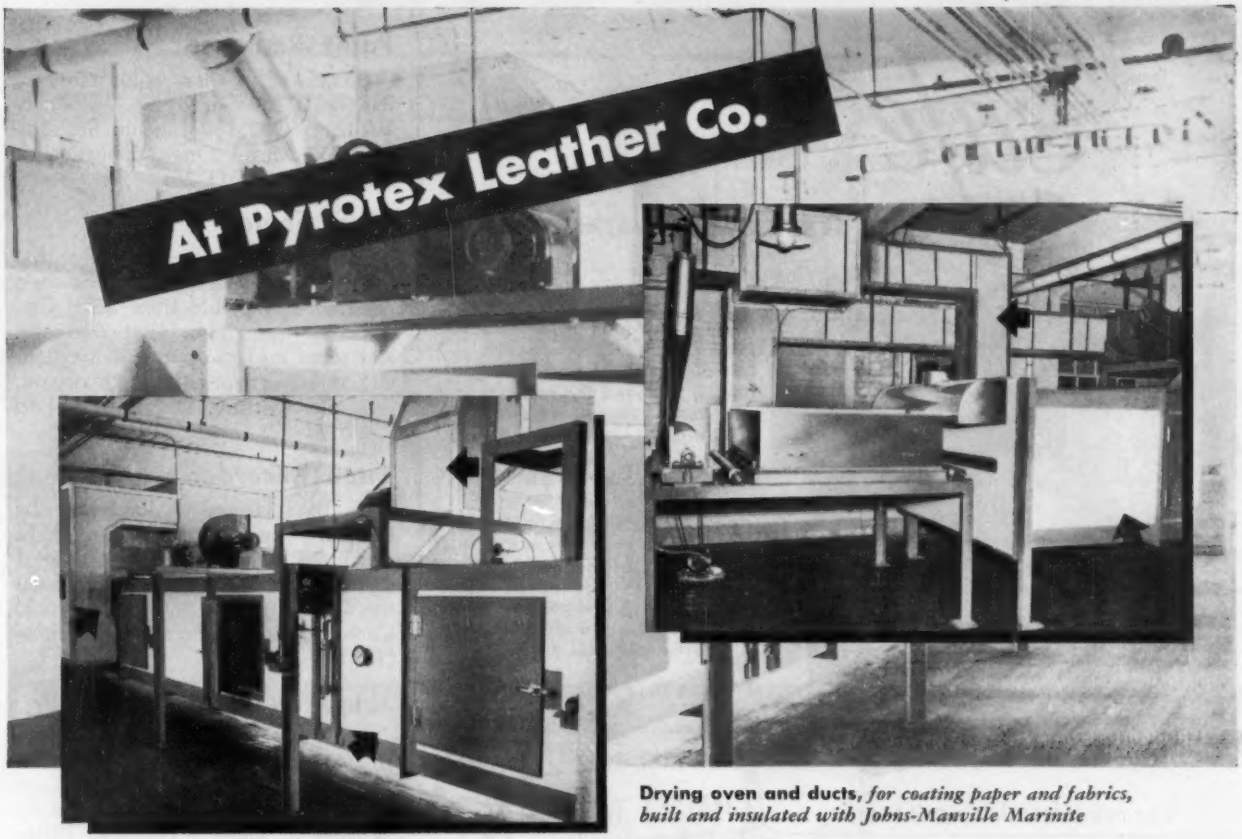
Floor Patch

Trowel-In, a floor patch, is used for resurfacing or patching concrete, stone, brick, or wood floors. Setting time: 18 hrs. It is available from Flexrock Co., 3600 G Filbert St., Philadelphia, Pa. (T-26)

Corrosion-Resistant Primer

LockPrime, a corrosion-resistant liquid primer for new or corroded steel surfaces, has been developed by Pennsylvania Salt Mfg. Co., Wiedener Bldg., Philadelphia 7, Pa. It is applied by brush or roller directly from the can. (T-27)

CONTINUED ON PAGE 222



Drying oven and ducts, *for coating paper and fabrics, built and insulated with Johns-Manville Marinite*

"Production increased... costs reduced"

with drying ovens built of J-M Marinite the non-corroding, structural insulating material

At Pyrotex Leather Company, Leominster, Mass., drying is one of the most important operations in the Company's manufacture of coated papers and fabrics. In recent years Pyrotex has constructed drying ovens of Johns-Manville Marinite*—with outstanding success.

They find that Marinite permits operation at higher temperatures . . . resulting in faster drying, greater output and lower production costs. Marinite also improves quality control because temperatures can be more accurately maintained. And Marinite requires practically no maintenance, needs no painting.

Made of Asbestos, Johns-Manville Marinite has many advantages for manufacturers of driers, ovens and other high temperature equipment. It combines structural strength with efficient thermal insulation. It simplifies construction, builds and insulates in one step. It speeds production because it provides uniform heat . . . better heat control . . . faster heating.

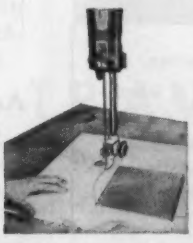
Marinite offers unexcelled maintenance advantages, too, because it has almost unlimited service life. It does not rot or corrode . . . it does not disintegrate in water . . . it needs no protective facing for normal use. To learn how Marinite can improve your equipment and reduce costs, write Johns-Manville, Box 60, New York 16, New York. In Canada, 199 Bay Street, Toronto 1, Ontario.

JM PRODUCTS

*Marinite is a registered Johns-Manville trade mark.

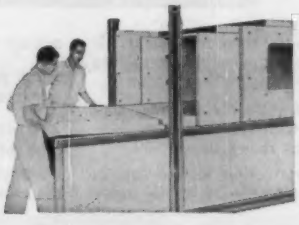
MARINITE builds and insulates in one operation

large, structurally strong sheets afford maximum heat control



MARINITE is easily worked

may be cut, drilled, shaped and fitted with ordinary woodworking tools



MARINITE speeds construction

can be erected without costly equipment—requires minimum angle-iron framing

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safe

FOR TEXTILE MILL INSTALLATION

EXPLOSION-PROOF

U/L approved for varied types of hazardous installations. Water-cooled condenser. Storage tank for better performance, greater economy!

Combustible dust or ignitable fibers present no danger to this Halsey Taylor Explosion-Proof Cooler, designed for safety in textile mills and approved by the Underwriters' Laboratories. Power supply line is enclosed in rigid conduit, connections are insulated and many other safety features are factory-supplied and factory-tested, so that *you can be sure it's safe when it's a Halsey Taylor.*

In addition, the Halsey Taylor line includes cafeteria coolers, as well as wall fountains and pedestal types for office use.

The Halsey W. Taylor Co., Warren O.

The nameplate that signifies safety ...

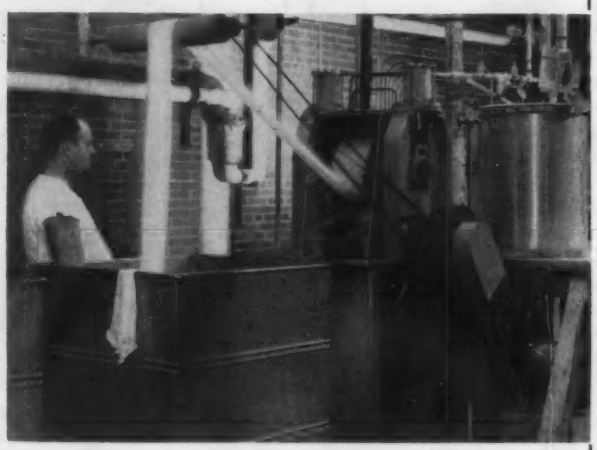
HALSEY TAYLOR

TW-10

NO MAINTENANCE . . .

with this
STAINLESS
STEEL
TRUCK

NO SNAG
NO TEAR
NO RUST



Invest in stainless steel equipment. It pays for itself in years of maintenance-free service. The first cost is the last cost.

Eliminate those extra maintenance and production costs with stainless steel handling equipment as shown above.

Provide extra protection to fine fabrics or yarns in the wet processing departments against rust and color contamination.

No painting or replacement of boards is necessary.

Write for free catalog and take advantage of our years of experience in the design of materials handling specials for the textile industry.

KENNETT EQUIPMENT AND MACHINERY COMPANY
KENNETT SQUARE • PENNSYLVANIA

Paint Remover

Blister-Off, a spray paint remover, has been announced by Wilbur & Williams Co., 130 Lincoln St., Boston 35, Mass. One application is usually enough. (T-28)

Floor Sealer

Floroseal Lumx, a floor sealer that will not darken regardless of the coats applied, is available from Selig Co., Atlanta, Ga. The plasticized-resin seal seeps into the pores of the floor and makes it resistant to grease, oil, dirt, and moisture. Drying time: 1 to 2 hrs. (T-29)

Time Recorder

A time recorder developed by Lathem Time Recorder Co., 1112 Peachtree, Atlanta 5, Ga., will print on the edge of any material from flimsiest tissue to heavy card stock. Carbon copies can be made if desired. (T-30)

Sump Drain

An automatic drain for compressed air systems—receiver tanks, airline sumps, drain legs, pneumatic storage tanks, etc.—is being manufactured by Wilkenson Corp., 3397 S. Platte Drive, Englewood, Col. It automatically collects and discharges moisture, free oil, and contaminants at line pressures from 10 to 250 psi. Rated capacity: 400 gals. of water per hour. (T-31)

Snow Plow

An all-steel snow plow with 30x12-in. adjustable blades is available from Leisure Industries, 96-09 Metropolitan Ave., Forest Hills 75, N. Y. Designed for removing snow from walks, driveways, etc., the plow sells for $18.75. (T-32)

Safety Cans

Safety cans for use where explosive or flammable liquids are handled have been introduced by Eagle Mfg. Co., Wellsburg, W. Va. The new cans are approved by Underwriters Laboratories and Factory Mutual for handling and storing oil, gasoline, and similar liquids. Sizes: 1 and 2 qts.; 1, 2½, and 5 gals. (T-33)

Audiometer Rooms

Semiportable audiometer rooms for testing the hearing of workers are being manufactured by Burgess-Manning Co., 5970 Northwest Highway, Chicago, Ill. (T-34)

Hydraulic Hose

Surgepruf, a line of hydraulic hose and couplings, has been introduced

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CARTER TRAVELERS

IS SMALL...

THE VALUE OF

IS BIG...

When you specify CARTER TRAVELERS, you insure smooth running work—finer, stronger yarns—simply because there is no substitute for QUALITY. With CARTER TRAVELERS you not only get top quality materials and workmanship, but the assured performance of a product manufactured under rigid scientific control. VALUE is built into CARTER TRAVELERS under the careful supervision of the staff of a modern metallurgical laboratory.

Whether it is a routine requirement or a highly specialized job, you will always get more-for-your-money value with CARTER TRAVELERS ... manufactured in the heart of the textile South and delivered with prompt, dependable service.

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COLLINS (TWO TWISTERS IN ONE)

TWO TWISTERS IN ONE

The Collins C/B Novelty Twister with DUAL-DRIVE AND ULTROHEAD FOR ALL YARNS

The Collins C/B Novelty Twister is considered TWO TWISTERS in ONE because each side of the frame can be run independently of the other side in regard to direction of twist, speed and yarn construction. This tape-driven dual-drive arrangement affords unlimited flexibility for the production of novelty and ordinary ply yarns.

The ULTROHEAD attachment is the most advanced mechanism ever developed for producing the widest possible construction variations in Splash, Nub, Seed, Bouclé, and Ratiné yarns.

The Collins C/B Novelty Twister was a star performer at Atlantic City and Greenville Shows. Today, mills are daily acclaiming its outstanding cost cutting performance and wide versatility. THERE IS A COLLINS TWISTER FOR EVERY PLY YARN CONSTRUCTION.

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Builders of Novelty, Ply, Big Ring, Beam, Cabling, Wet, Trap, Rayon, Paper, Glass, Sample and Special Twisters for all yarns.

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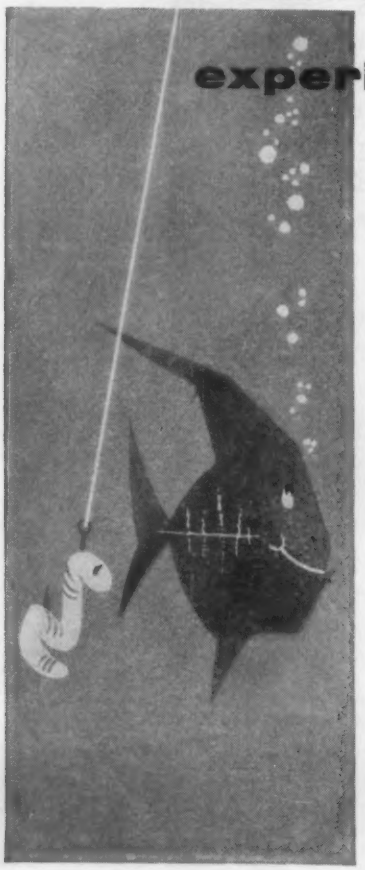

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by Jay Mfg. Co., Oliver Bldg., Pittsburgh, Pa. The couplings are made to J.I.C. standards and feature a double-wedge grip, which makes possible assembly on rubber-covered hose without skiving. (T-35)

Control Lubrication System

Automatic bearing lubrication at predetermined intervals is provided by an air-operated centralized lubrication system announced by Lincoln Engineering Co., 5742 Natural Bridge Ave., St. Louis 20, Mo. The system was developed for servicing machines where lubrication is required at varying intervals. (T-36)

Carton Stapler

Pneumatic staplers for closing carton tops, called Schafroth after the inventor, are available from Container Stapling Corp., Box 247, Herrin, Ill. Features: five moving parts, low cost ($175), portable, stainless-steel chassis. Air requirements: 50 to 60 psi. (T-37)

Paint Stops Slips

Safe-Walk paint, an abrasive coating for use where there's a slip hazard, is applied with brush or trowel. Made by G. H. Tennant Co., 2530 N. 2nd St., Minneapolis 11, Minn., the paint costs about 4¢ a sq. ft. for one coat. Colors: red or dark gray. (T-38)

Gear Units

The Philadelphia Gear Works, Inc., Philadelphia, Pa., has developed Hi-Speed gear units for speed-reduction and increaser service. Rotating speeds up to 9,000 rpm. and pitch-line velocities to 10,000 ft. per min. can be accommodated without modification. Applications: turbine and air-conditioning drives. (T-39)

Solenoid Valve

Compact, straight-through-flow, high-pressure solenoid valves have been announced by Specialty Products Co., Inc., 3725 Monitor Ave., Minneapolis 16, Minn. The valves are leakproof up to 200 lbs. pressure, operate in any position, and can be mounted quickly and easily without brackets. No gaskets are used. (T-40)

Recorder Ink

A general-purpose ink has been developed by The Foxboro Co., Foxboro, Mass., for use with industrial recording instruments. Called Type 1500 ink, it produces a sharp record of a process variable. For convenience in inking the pen, the ink is furnished in a 1-oz. polyethylene squeeze bottle. (T-41)

CONTINUED ON PAGE 226

ALL TYPES...ANY CLASS FIRE!

Since different fire hazards require different types of fire extinguishers, PYRENE—C-O-TWO manufactures all types . . . the finest and most complete line on the market today.

When doing business with PYRENE—C-O-TWO, you receive unbiased advice on what is best for your particular fire hazards, whether class A, B or C. Also, there is a well-rounded sales engineering organization having nation-wide representation to render top quality service wherever you're located.

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HASKELL-DAWES MACHINE CO., INC.

2231 E. ONTARIO ST.
PHILADELPHIA 34
PA.

Loom Cleaner

A loom cleaner with a water base has been developed by Texize Chemicals, Inc., Greenville, S. C. No corrosion of loom parts and elimination of the fire hazard are features. (T-42)

Premixed Mortar

Nonshrinking grout and mortar are available in ready-to-use form from The Master Builders Co., 7016 Euclid Ave., Cleveland 3, Ohio. The formulations use the correct proportions of cement, sand, and Embeco so that only water has to be added. (T-43)

Cooling Towers

Ten- and 15-ton models are featured by Acme Industries, Inc., Jackson, Mich., in all-metal cooling towers for 1955. Blowers are used with or without ductwork for indoor or outdoor installations. Galvanized finish. (T-44)

Variable-Speed Pulley

Infinitely variable speeds from a constant-speed motor are possible with the Hi-Lo automatic pulley built by Equipment Engineering Co., 2853 Columbus Ave., Minneapolis, Minn. A handwheel moves the motor assembly, and a standard V-belt is used. The pulleys adjust automatically. Horsepower range (at 1,750 rpm.): ½ to 5 hp. (T-45)

Temperature Regulator

Angle temperature regulators that can be mounted directly on heat exchangers, instant water heaters, etc. have been developed by D. C. Keckley Co., 400 W. Madison St., Chicago 6, Ill. Wearing parts can be renewed, and an "over-run" feature protects the thermal element. Screwed connections: ½ to 2 ins.; flanged connections: 2 to 8 ins. (T-46)

Steam Traps

Low-, medium-, high-pressure steam traps have been announced by Strong, Carlisle & Hammond Co., 1392 W. 3rd St., Cleveland, Ohio. Available in semi-, cast-, and forged-steel construction for pressures to 2,500 psi. and temperatures to 1,100° F. A dual fulcrum operates the valve lever. (T-47)

Pressure-Sensitive Adhesive

Prestix, a pressure sensitive adhesive that makes a coated material self-adherent, has been developed by Adhesive Products Corp., 1660 Boone Ave., New York 60, N. Y. You can make self-sticking tapes, labels, signs, decorative fabrics, etc. Application: by brush or machine. (T-48)

CONTINUED ON PAGE 228

FOUL ODORS

NO LONGER NECESSARY!

F. & E. SOLUTION, the modern deodorant and disinfectant, *neutralizes* foul odors and ammonia smells *instantly*, and replaces them with the pleasant, refreshing aroma of eucalyptus—so different from the usual harsh "just cleaned" disinfectant smell. Ideal for mopping and spraying.

F&E doesn't merely cover up bad smells—it *transforms* them into odorless compounds by modern chemical means.

One cupful added to your regular cleaning solution provides simultaneous cleaning and deodorizing. And F&E is *mighty economical!*

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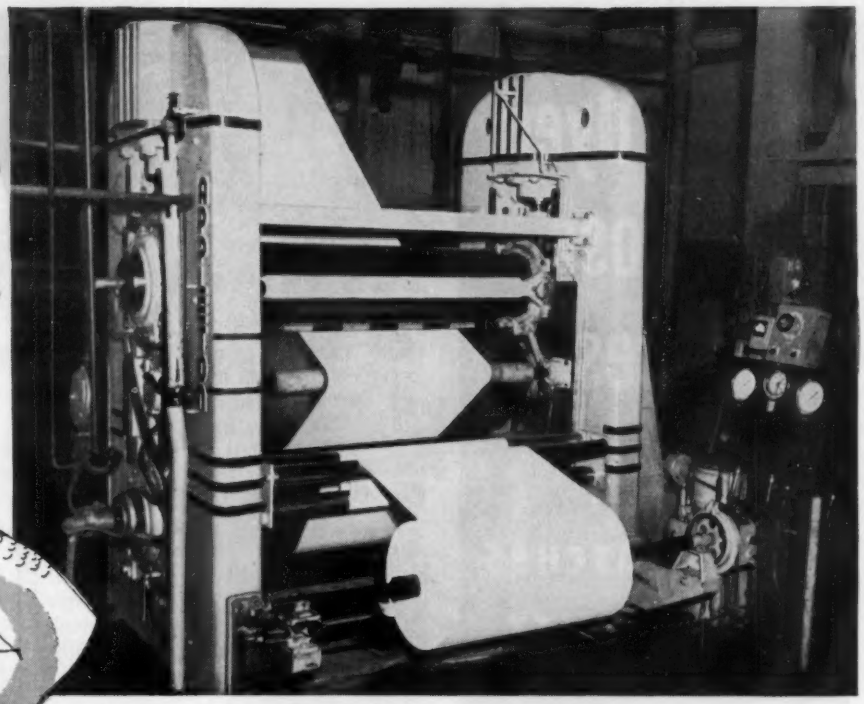
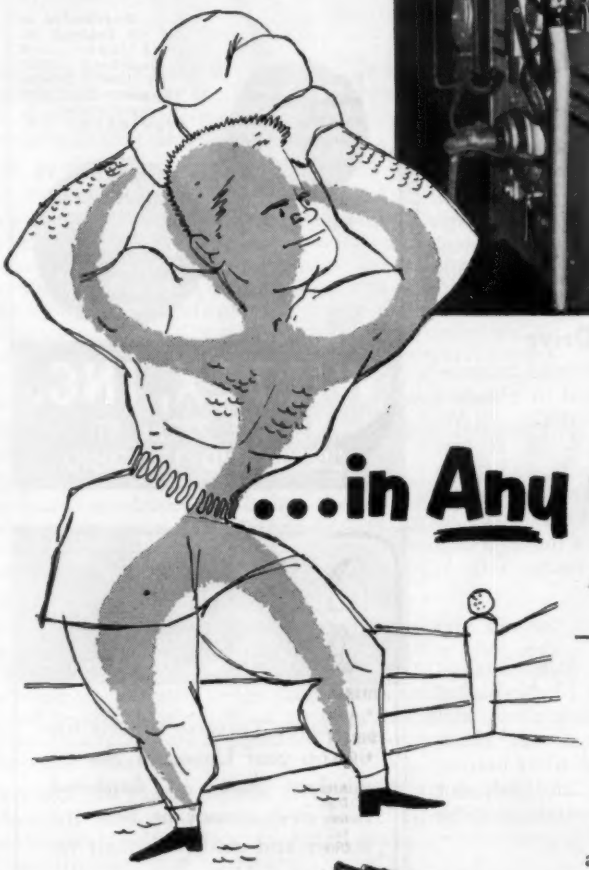


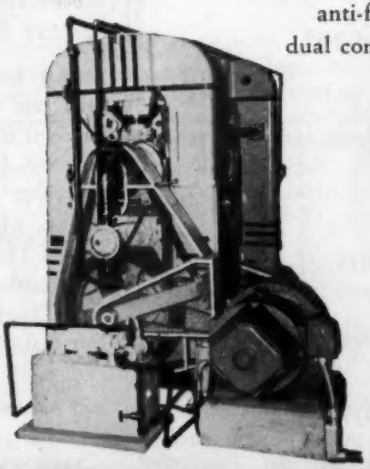
Here is an 80 Ton Appleton 3 Roll Calender in operation



...in Any weight division

The Appleton 3 Roll Hydraulic Friction Calender —available in 40 to 120 Ton models—takes difficult jobs in easy stride, performs dependably day after day, combines speed with consistent quality. Illustrated is the 80 Ton model. Its specialty— Everglaze Glazed finishes.

Long life features include all rolls mounted in anti-friction bearings with force feed oil lubrication . . . dual control pressure system . . . cooling cylinder . . . 40 h.p. Reliance V.S. drive.



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Cake Dyed Viscose Process Yarn

LARGE BATCHES
BIG CAPACITY

We can supply yarn and dye large volume of cakes with prompt delivery — Direct shades and developed shades — Avoid unnecessary small batch-to-batch matching by ordering 500 lbs. per color.

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for All Industries

Plant at Providence 1, R. I.

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Toggle Valves

Toggle-operated valves are available from George W. Dahl Co., Bristol, R. I. Bodies are made in bronze, aluminum, steel, or stainless steel, with a neoprene diaphragm. The valves have been tested to a 500-psi. air pressure. Outside diameter: 1½ ins. **(T-49)**

Drum Rack

Lightweight storage racks for drums are available from Star Welding Co., 1054 E. 134th St., Cleveland 10, Ohio. Designed to raise drum spouts to pouring heights or for storage, the rack has a welded-steel construction and will support a filled 55-gal. drum. Cost: $5.99. **(T-50)**

Plastic Labels

Plastic labels for marking drawers, stockroom bins, production equipment, etc. are available from Burrell Corp., 2223 Fifth Ave., Pittsburgh 19, Pa. The labels stick without moistening and won't smudge with hand- or typewriting. **(T-51)**

Variable-Speed Drive

The CUB B variable-speed transmission has been introduced by Standard Transmission Equipment Co., 70 W. Union St., Pasadena, Calif. It uses standard B-section V-belts, and it has double variable pulleys on a ball-bearing countershaft, which can be pivoted laterally between the drive and driven pulleys. Speed range: 3 to 1. Cost: $36. **(T-52)**

Welding Alloys

The Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y., has announced silver brazing alloys and flux in various forms—rod, wire, sheet, and special shapes. The silver brazing flux is in paste form and will not freeze, crystallize, or separate; and the residue rinses off. **(T-53)**

Silicone Lubricant

A silicone lubricant capable of operating at 400° F. has been announced by General Electric Co.'s Silicone Products Dept., Pittsfield, Mass. The lubricant combines the lubricating qualities of hydrocarbon with the properties of silicones. **(T-54)**

Torque Limiters

Improved overload protection devices for machinery drives, featuring friction disks and nut-locking arrangement, are available from Morse Chain Co., 7601 Central Ave., Detroit 10, Mich. Standard Type A roller-chain sprockets, V-belt pulleys, and gears can be mounted on the Torque Limiters. Shaft mounts: ½ to 2½ ins. dia. **(T-55)**

CONTINUED ON PAGE 236

WILTEX
ALUMINUM
CLOTH ROLLS

Heat-treated aluminum castings, funnel shaped on inside to facilitate insertion of through shaft.
High strength heat-treated aluminum alloy tubing. Free from splintering & distortion, cannot rust and no fire hazard.
Distributed in N. England, M. Atlantic, and Southern states by United States Supply Co., 585 Broadway, E. Providence 14, R. I.
Wilgrip Special Finish eliminates need for starting slot or irregular contoured roll.
Inert gas welded joint. Standard sizes 3-½" & 4-½" diameter, any length, other sizes quoted on request. Journal ends can be furnished.

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1340 E. 222nd ST.
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Wayne Traverse Wheels for use on your Universal No. 90 winders, made of *hardened tool steel* cannot be beat for service and quality in their respective fields.

Our hardened steel wheels will last indefinitely, and because of their hardness will not cut or become nicked and therefore damage your silk. These wheels are accurately made. The size is correct and the finish of the face of the wheel is as smooth as polishing can make it.

Ask for sample and prices

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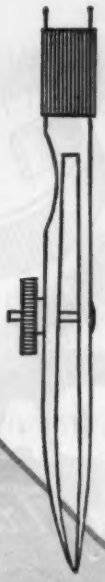
AGAIN!

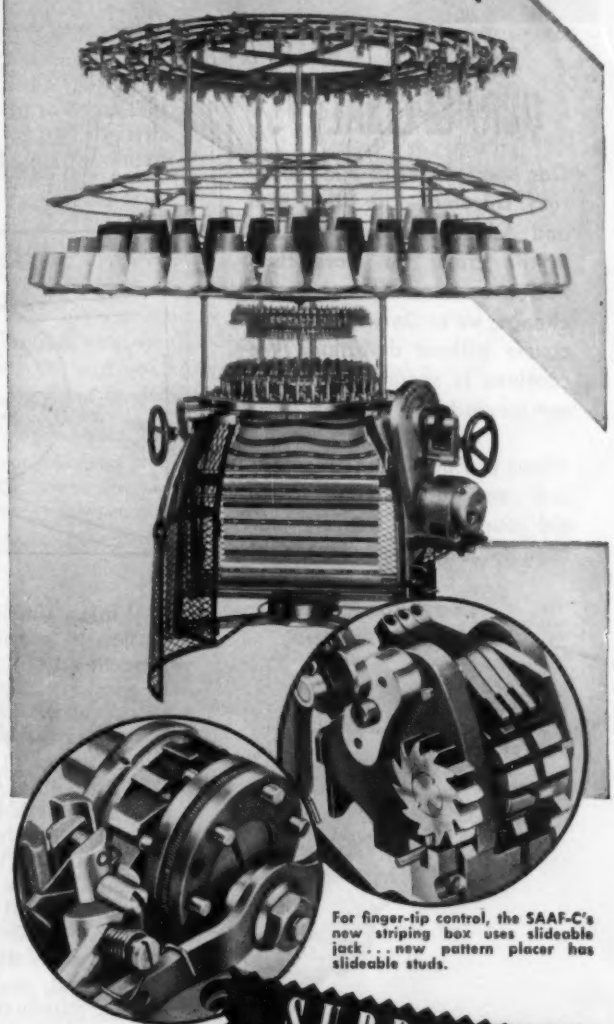
SUPREME ENGINEERING

multiplies knitting efficiency with this new striper...



MODEL SAAF-C

New, "One-Machine Knitting Mill" Has 32 Striping Feeds... Doubles Production... Gives Greater Pattern Variety... Unprecedented Convenience and Safety



Supreme engineering has a reputation for cutting cloth production costs by multiplying machine efficiency. The SAAF-C variable striper and pattern placer is the newest advance in that successful record.

HAS 32 FOUR-COLOR STRIPING BOXES, 32 PATTERN WHEELS, 32 PATTERN PLACERS

It's a super-improved version of Supreme's famous SAAF, with double the production capacity on certain fabrics, plus a terrific increase in pattern versatility. The SAAF-C combines in one machine all the knitting ability of all other Supreme stripers plus important new features which accelerate high quality output and simplify operation. In addition to variable striped fabrics, pattern wheel fabrics and Pattern Placer fabrics the Model SAAF-C knits lay-in fabrics, knit and tuck cloth, and knit and welt cloth.

NEW "STEP-DESIGN" YARNSTAND (PAT. PEND.) BOOSTS EFFICIENCY, SPEED AND SAFETY

Holds 128 cones, each clearly visible and easily accessible. Sufficient headroom for knitter to work beneath stand without stooping or bending. Rugged, stationary anti-vibration construction facilitates faster cylinder speeds, assures greater safety.

NEW STRIPING BOX DESIGN SIMPLIFIES SETTING

Design drum has been redesigned to permit sure, simple, manual setting... without screwdriver or wrenches. Adjusting studs have been replaced by a slideable jack which remains permanently in the drum and is easily shifted by hand to engage the proper striping finger. Eliminates misalignments. More compact design gives operator better view and easier access.

NEW PATTERN PLACER DESIGN GIVES FINGER TIP CONTROL

No tools needed to set pattern placer. Slideable studs, permanently self-retained in design drum, provide easy, finger-tip control of operation.

NEW SCISSOR-TYPE SYNCHRONIZED "NO-WASTE" CUTTERS

Each striping box has exclusive new scissor-type cutter which is positive and foolproof.

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For finger-tip control, the SAAF-C's new striping box uses slideable jack... new pattern placer has slideable studs.

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MILL MAINTENANCE

Take Care of V-Belts To Make Them Last

V-belt drives are manufactured for long life and high efficiency. Although V-belts require a minimum of attention and maintenance, simple precautions will prolong their life, increase their efficiency, and help insure full production.

All the V-belts on each drive must pull together to maintain their united strength. To get that result, you must follow two important rules:

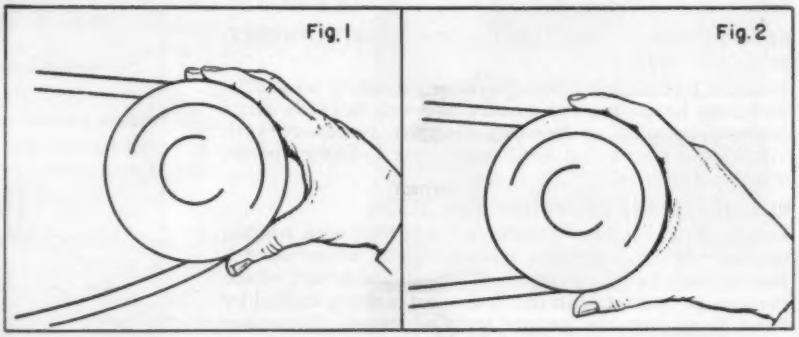
1. Maintain Proper Tension

Sometimes the lack of sufficient tautness in a drive causes all its V-belts to slip, but more often only a few belts slip to intermittently overload the gripping belts. Conversely, a loose belt occasionally whips taut across the tension side of the drive and hogs the load.

Most stretch that occurs during the life of a set of V-belts takes place during the breaking-in period. However, drives should receive regular follow-up inspections for proper tension.

On drives lacking proper tension, the slack belts have a whipping action at peak loads and when the motor is started. A loose V-belt will stretch more in service than a tight one.

Don't be afraid to pull V-belts tight; stretching them slightly in adjusting tension is good for them. If you have no equipment for measuring tension in terms of pounds of pull, use this rule: a slack V-belt feels dead when you thump it with your hand; a properly taut V-belt is springy.



While a V-belt does not depend on tension to provide its grip, it is dependent on tension for the extent of its grip. Fig. 1 shows how inadequate tension allows a V-belt to hang down away from the bottom of a sheave to reduce the arc of contact.

On the other hand, Fig. 2 shows a properly taut V-belt wrapped around the sheave in a full arc.

The area of V-belt contact is important because horsepower ratings for the different sizes of V-belts are based on a 180° arc of contact. But this arc varies slightly from one drive to the next, and allowance is made for the variation when the drive is engineered.

So when a properly engineered drive is delivered to you, it is assumed that proper tension and a proper contact arc will be maintained. Otherwise, slip is apt to develop.

When one or two V-belts in a set have become worn or damaged, the remaining belts have stretched beyond their original strength. This condition tends to throw the bulk of the load on new, shorter, and stronger-gripping belts added to the set. The new belts will overwork and last only a fraction of their normal life. When one or more belts have to be replaced, always replace the full set.

2. Maintain Proper Alignment

A flat belt depends on tight frictional contact for its grip; a V-belt produces its own grip in the sheave. While traveling in a relatively straight line between sheaves, a V-belt has straight sides. But when it rides into the groove of a sheave and bends as it begins to circle the sheave, the bend bulges the sides of the belt; this action produces high-pressure contact between the belt and the side walls of the groove.

For this reason, one of the most important maintenance jobs is to keep

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way ahead in color styling and colorfastness...

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What could be more fitting for Chrysler's Forward Look than upholstery with the most *forward* form of color? The caged-in color of Coloray, Courtaulds' revolutionary rayon fiber.

You'll see Coloray's richer, lovelier colors in new Dodge and Plymouth models. Coloray green...blue...grey...black...sparked with metallic silver...woven into patterns of new distinction. Coloray—creating interiors of living-room luxury that are proof against the rigors of the road!

PLYMOUTH BELVEDERE (all models)

DODGE CUSTOM ROYAL FOUR-DOOR SEDAN

DODGE ROYAL FOUR-DOOR SEDAN (also hard-top convertible)

Imagine colors that won't fade or streak in the streaming light that pours through new-horizon windshields. Colors that are *superfast* to moisture, atmospheric fumes, dry cleaning chemicals. Coloray's colorfastness ratings are phenomenal! Coloray fiber itself adds a quality feeling...tensile strength...non-static comfort.

Coloray contributes magnificently to the forward look that is moving new-model cars...and new model fashions and home furnishings too. Advance your own interests! Get a forward look for your next line with Coloray.

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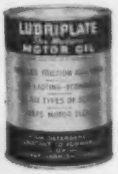

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the side walls of sheave grooves perfectly straight. When walls are worn out of straight, the gripping power and efficiency of V-belts is greatly reduced.

Another reason it's necessary to maintain proper alignment is that shafts of the driving and driven sheaves out of parallel draw the V-belts on one side of the set tighter, and they pull more than their share of the load.

Sheaves out of alignment also subject belts to needless rubbing on their sides; this condition wears the belt covers and builds up harmful heat.

Fig. 3

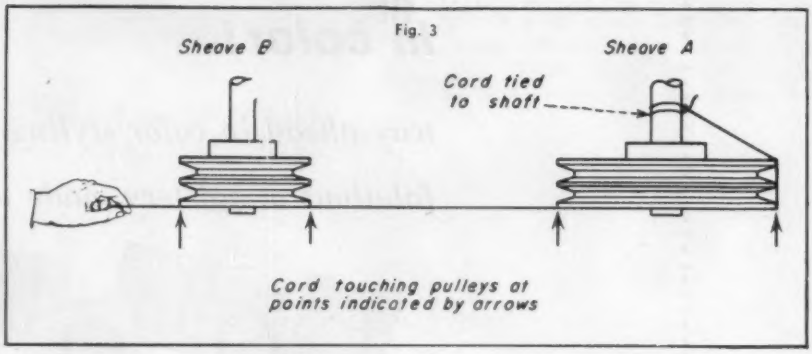


Fig. 3 shows how to align sheaves with a cord when a straightedge is not available. A light strong cord secured around the shaft of Sheave A and stretched tight along the sides of both sheaves will touch all points indicated by the arrows if the sheaves are in perfect alignment. Be sure the cord is held straight and tight and that it barely touches the sheaves at the indicated points. Rotate each sheave through half a turn to check the alignment. If the inner rim of either sheave indicates misalignment, it must be corrected promptly to obtain long belt life. **Allis-Chalmers Mfg. Co.**

How To Dye Sweaters

CONTINUED FROM PAGE 137

Hold at this temperature for 20 mins., and then raise to 160° F. After 20 mins., raise to 190 to 200° F. for acetate colors or 205 to 208° for acid colors. Dyeing proceeds at these temperatures until the shade is matched.

Satisfactory fastness and color costs are provided by selected disperse dyes for light and medium shades, while acid colors are used for the dark shades.

As with all thermoplastic synthetics, care is taken not to change dyebath or rinsing temperatures too rapidly; otherwise, traces of folds and creases will be left in the finished garment.

After dyeing, the nets of sweaters are centrifuged of excess water, removed, and dried in a tumbler dryer. They are returned to the customer for final pressing and boxing.

Paddle Machine Used for Orlon

Universal prefers the open paddle machine for dyeing Orlon garments. The Orlon sweaters are not heat-set but are placed directly in nets of 8 to 10 garments each. The usual scouring prior to dyeing is given, and dyeing is started at 120° F. After 20 mins., this temperature is raised to 160° F.; and after another 20 mins., it is raised to 205 to 208° F. for the balance of the dyeing cycle.

When the dyeing is finished, care is taken to bring down the temperature of the dyebath slowly. A drop of 2 to 3° F. in 5 mins. will prevent setting any creases formed in dyeing.

Finish Protects Against Bacteria

A durable finish that Universal calls Immune is added in the final rinse for some sweaters. Its purpose is to make the garment a poor host to a number of fungicidal and bactericidal organisms commonly found in mildew and some simple skin disorders.

Every machine at Universal is controlled by a recording controller that automatically repeats the desired temperature and time phases of the dyeing cycle by a cam system. Once a satisfactory cycle has been established and the cams cut, every load is processed at the same time and temperatures for the various baths as the previous one. Careful dyeing by the formula method completes control of the principal variables that most affect the fabric in the dyeing process.

MORE BRILLIANT COLORS, EASIER CLEANUPS

result from dyeing in Stainless Steel

■ As a leading manufacturer of colored cotton goods, Roanoke Mills Company, Roanoke Rapids, N. C., looks on its dye room as the key spot in its operations. Handling more than 100 shades, Roanoke Mills takes every possible step to guard against dull colors and off shades.

In 1947, beam dyeing was introduced. Ten Stainless Steel dye kiers, along with Stainless beams and dye mixing tanks, handle the warp dyeing. To date, they show no sign of wear and their bright surface allows no dirt or dyestain to escape unnoticed.

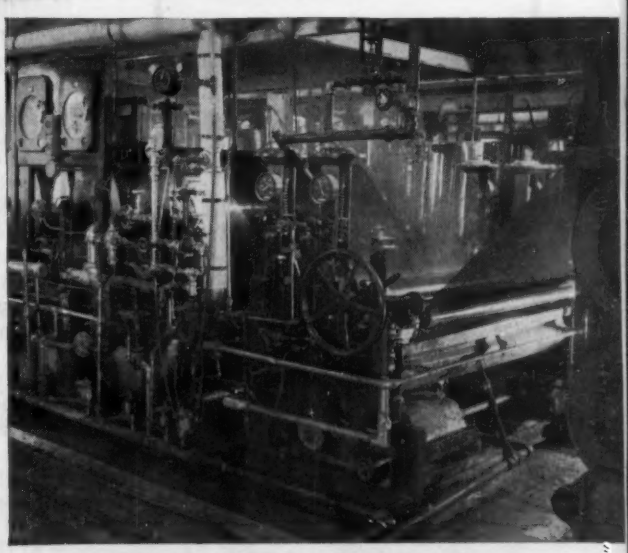
Roanoke Mills finds that dyed colors have 15% more brilliance since Stainless equipment was introduced. Lighter colors can be handled with ease. And cleanups consist only of a rinse, instead of up to 60 hours of cleaning per week on iron kettles previously used.

In the slasher room, the size box and dry cans are Stainless Steel, as are starch mixing and storage kettles and their agitators. A company official sums it all up: "It would cost us 10 times as much in the long run not to use Stainless Steel."

Do a little figuring and you'll find that's likely to be true in your plant too. And when you order Stainless equipment, be sure your fabricator uses perfected, service-tested USS Stainless Steel.

←

A STAINLESS STEEL dye beam is removed from a Stainless kier. Gaston County Dyeing Machine Company, Stanley, N. C. fabricated this equipment for Roanoke Mills Company.



YARN PASSES THROUGH a Stainless Steel size box fabricated by Cocker Machine and Foundry Company, Spartanburg, S. C. The dry cans at the right are Stainless, too, and were fabricated by The Textile Shops, Spartanburg.

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5-75

UNITED STATES STEEL

What mill people say ABOUT ALLEN SOCKET SCREWS

"No other takes its place—use lots on account of safety."

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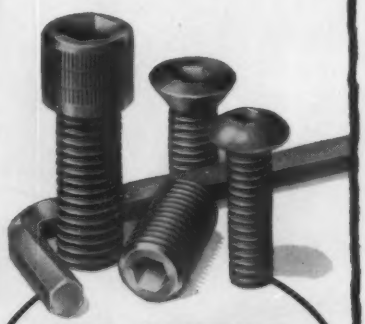
North Carolina Cotton Mill
(name on request)



ALLEN
MANUFACTURING COMPANY
Hartford 2, Connecticut, U. S. A.

Pigment Printing

CONTINUED FROM PAGE 86

precondensed urea-formaldehyde or melamine-formaldehyde resins.

In use, fixing is obtained by steaming. The catalysts used, such as ethyl lactate, tartrate, or ammonium salts, become acidified during steaming and polymerize the resins. For use with some pigment products, thickeners such as alginates, tragacanth, methylcellulose, or polyvinyl alcohol are chosen. They give the desired results with low solids content, which is important to retaining a soft hand.

Combined effects of pigment printing and durable glaze finishes are possible by the use of such combinations followed by friction calendering. Interesting bright resist effects on a dull ground are obtainable by impregnating the fabric with dimethylol-urea and titanium dioxide, followed by printing with alkaline vat pastes.

Other interesting water-soluble binders are based on products of acrylic acid. These binders are coupled with a nonsaturated polyfunctional compound that gives three-dimensional networks in fixing. Both normal water-soluble and emulsion-type thickeners can be used. The binder gives a very high viscosity collodial solution; so the amounts of thickener necessary are very small.

The dyes may be fixed by heat at 100° C. or by alkaline aftertreatment at 50 to 80° C. These lower curing temperatures are important where polyvinylchloride-derivative fibers are to be printed.

2. How Pastes Are Prepared

Water-in-Oil Types. The water-in-oil types require a high-speed mixer to produce a good printing paste. A typical water-in-oil emulsion is made by:

1. Weighing the binder
2. Adding the solvent
3. Slowly adding the water and forming the emulsion.

To this base is added the dispersed dye or dyes, and the mixture is homogenized by a high-speed mixer.

Variations in viscosity are obtained by changing the water-to-solvent ratio. More water gives a higher viscosity; addition of solvent reduces the viscosity. The ratio between the base emulsion and dyestuff will vary with the shade; generally, one part dyestuff to two parts base is considered a good starting point. The solvent used is chosen to give sufficient dissolving power to the resins without producing emulsions that are too dense or are unstable. The binders used are for the most part unaffected by acids and alkalis and can be used with discharge or direct printing colors.

Water-in-oil dyes and binders should be stored away from flames at a temperature of 0 to 35° C.

Oil-in-Water Types. There are variations in formulas by different manufacturers, but in each case a thick emulsion is made with water as the external phase as a base. In general, they are prepared this way:

1. An emulsion agent is dissolved in hot water and added to the desired amount of cold water.
2. The binder is added.
3. A high-speed mixer is used to mix in the solvent to get the required consistency.

Proportions of ingredients will vary with fastness requirements and whether the mixes are for machine printing or screen printing. The base is used with color paste, more binder, and water to obtain the final printing paste. A catalyst such as ammonium sulfocyanide is added just before use.

One manufacturer supplies the base ready for dilution and addition of color paste, without special mixers. The catalyst is added just before use.

The stability of uncatalyzed oil-in-water emulsions is very good.

3. Tips on Printing

Pigments are applicable to all types of printing, particularly with machines and screens.

In screen printing, solvent-resistant varnishes must be used to retain the pattern forms. To avoid hard finishes, the squeegee should be given one or two runs at the most. The oil-in-water types are generally more suitable for screen printing than the water-in-oil types.

In machine printing, chrome-plated rollers with shallow engraving are ideal. Soft counter rollers and moderate pressure are also preferable. Feed rollers must be made of synthetic rubber because of the solvents in the pastes. High-speed operation usually gives the best results.

The advantages of the oil-in-water emulsions are:

1. Low flammability
2. Miscibility with water, which aids in dilution and in cleaning equipment
3. Easier cleaning of back grays
4. Possibility of better fastness to rubbing because of better absorption, and brighter and more-uniform shades because of less agglomeration of pigment.

The water-in-oil-type emulsions show better stability over a period of time.

The choice of any of these emulsions will depend on other considera-

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the cellular, stay-dry insulation

Airview of Grace Bleachery, the world's largest . . . recently enlarged by The Springs Cotton Mills at Grace, S.C. *Engineers and Architects:* Robert & Co. Associates, Inc., Atlanta, Ga.; *Roofers:* Ingold Company, Inc., Hickory, N.C. and Arvett & Ledbetter Roofing and Heating Co., Charlotte, N.C.

On Springs Cotton Mills' 16-acre bleachery roof FOAMGLAS insulates effectively because it stays dry

On this 16-acre roof of their Grace Bleachery, The Springs Cotton Mills has found that FOAMGLAS insulates effectively because it can't absorb moisture and lose insulating efficiency.

Installed in 1947 on the original bleachery roof, FOAMGLAS has effectively kept down condensation on the roof slab and conserved heat in the winter. Seven years later it was picked again to insulate the roof of a major addition to this bleachery, the largest in the world.

This unique cellular glass insulation has been used extensively by the Springs Mills in other ways . . . on 350° steam lines . . . in cold storage spaces . . . and on 20 additional acres of mill roofs including one in Lancaster, S.C. covering more looms (7,500) than any other roof in the world.

It will pay *you* to get the full story on the use of FOAMGLAS for buildings, cold storage space, piping, or tanks and equipment. Please write today for a sample and literature indicating your specific interest.

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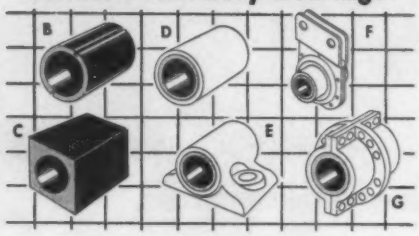

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DECATING	GYRATING	SINGEING	WEAVING
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GRAPHALLOY BUSHINGS cut TEXTILE manufacturing costs in these ways:
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- PREVENT OIL AND GREASE SPOTS ON FABRICS
- AVOID WEAR ON SHAFT AND BUSHING FROM LINT AND DUST GATHERED BY OIL FILM
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tions, since each has its advantages for certain applications.

How the Print Is Fixed. Pigment fixation is caused by polymerization of the resins used. The fixing is done by high temperatures, usually in a matter of seconds under sufficient heat. The fixing heat will vary with the emulsion used and the fabric.

Fastness to washing and rubbing will vary with the way the pigment is fixed and also with the fiber. Cotton generally gives best results. Rayon washfastness is less satisfactory, and wool is even worse.

The water-in-oil types may be fixed by simple steaming, as in regular printing practice. Oil-in-water and aqueous-solution types are fixed by dry heat, such as is used in resin curing.

A particular type of fixing is aftertreatment by an alkaline wash. This treatment permits pigment printing of thermoplastic fibers.

Usually, a simple calendering will give sufficiently soft hand. Some screen prints may require a soaping; and of course where dyes and pigments have been used together, the usual soaping process is followed.

Special Printing Methods. Pigment printing is generally done alone, but it may be run with fast dyestuffs for special purposes. Since the binders generally withstand discharge printing formulas, this style as well as resist styles are often combined with pigment formulas.

Other interesting effects are obtained by the use of metallic powders combined with colored pigments on black backgrounds. When precondensed resins are used in the printing formula, friction calendering produces some beautiful effects. Luminescent pigments applied over fluorescent dyes on acetate fabrics give unusual results for special purposes. The introduction of phenol into pigment printing pastes used on nylon produces seersucker effects because of local shrinkage in the areas affected by the phenol.

4. Advantages and Disadvantages

Pigment printing is still undergoing development, and its use will undoubtedly be extended as time goes on.

Economic factors will determine the choice between pigment and vat processes in some cases. Methods of domestic laundering may limit extensive application, but washfastness and rubbing fastness are for the most part satisfactory under normal laundering conditions.

From the printer's standpoint, the pigment offers these advantages:

The print is in full color as it leaves the roller, and defects can be corrected quickly.

Little or no aftertreatment is needed.

There are no restrictions on time between printing and fixing.

There is no need for steam for fixing.

There are economies in color cost because of shallow engravings on rolls.

Pigment printing in combination with other methods gives unusual effects.

Further application of pigment methods to printing will depend largely on reduction in binder costs and improvement in washfastness and rubbing fastness.

Orlon and Orlon Blends

CONTINUED FROM PAGE 151

These prints are rapid-aged 5 mins. and oxidized 10 mins. at 160 to 180° F. in a solution containing 2% sodium perborate and 1% acetic acid. The prints are soaped at 180 to 200° F. with 0.5% soap and 0.1% soda ash for 10 mins.

Equipment & Supply News

CONTINUED FROM PAGE 228

Aluminum-Coated Seal

Armco Steel Corp., Middletown, Ohio, has developed a new type of aluminum-coated steel. Known as Armco Aluminized Steel (Type 2), it is said to combine the corrosion-resistant and heat-reflectant qualities of aluminum with the strength of steel. Applications: rolling doors, covers for tanks, roof decks, etc. (T-56)

Steam and Water Mixer

A new steam and water mixer, which utilizes full heat energy by injecting steam directly into the water, has been developed by Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Box 400, Knoxville, Tenn.

The steam-water mixer can be used wherever hot water is required and steam and water are available. For textile mills, it would be used to heat process water or water for wash rooms. Fine temperature ranges are available. (T-57)

CONTINUED ON PAGE 238

from Thermoplastic Fibers to

HIGH BULK and STRETCH YARNS at INCREASED SPEEDS

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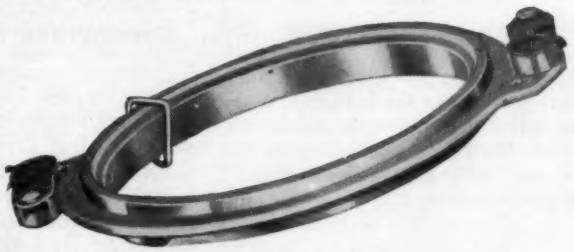
HERR Lightweight Flyers



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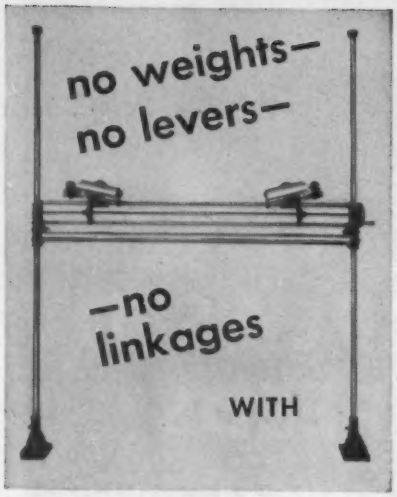

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Equipment & Supply News

CONTINUED FROM PAGE 236

Colorimeter Attachments

New attachments for the Model C Color-Eye colorimeter, made by Instrument Development Laboratories, Inc., 163 Highland Ave., Needham Heights, Mass., include sample holders designed for textile materials, a pair of neutral density filters, and a viewer attachment for visual inspection of samples. (T-58)

Specific-Gravity Meters

Specific-gravity meters for liquid solutions, mixtures, and slurries have been announced by The Bristol Co., Waterbury, Conn. The instruments can be calibrated in terms of specific gravity, Twaddle units, degrees Baumé, or other appropriate units. (T-59)

Rayon-Carpet Yarn

CONTINUED FROM PAGE 122

more desirable. Intermediate lusters can be achieved with bright- and dull-fiber blends.

Rayon and Nylon Blends

In recent months, considerable interest has been shown in blends of rayon and nylon fibers. At present, the most popular blends contain 10% and 20% 15.0-den., 3-in. nylon. The blends are processed in the same way as 100%-rayon yarns.

Opening and Picking

Rayon carpet fiber is opened in many mills by passing the stock through two hopper feeders in tandem and feeding directly to the pickers. Some mills use their complete opening lines with no obvious ill effects, but it is desirable not to use harsh opening equipment such as vertical and lattice openers.

Long fibers have a tendency to lap around cylindrical stripper rolls in hopper feeders, and most mills have found it necessary to replace this roll with a stripper comb. Rayon tends to feed heavier than cotton; so hopper-feed settings are usually closer than settings for cotton.

All picker beaters must be the Kirschner type. Blade beaters cause excessive fiber breakage. On a two-beater picker processing 3-in. fiber, the first beater should be set $\frac{1}{2}$ in. to the feed roll and revolve at about 900 rpm. Second-beater speed should be 900 to 1,000 rpm. with a $\frac{3}{8}$-in. setting. These speeds are based on a picker production of 350 to 400 lbs. per hr.

Calender-roll pressures should, in most cases, be reduced. If the pressure is not reduced, small lumps that come through the picker unopened are sometimes pulverized.

Laps should weigh from 14 to 16 oz. per yd. Coarse-denier rayon doesn't condense as much as cotton, and many mills have found that the total lap weight (excluding the pin) should not be over 45 lbs.; with more weight, laps are too bulky and the outer layers are too soft.

Carding

With few exceptions, flat-top cards with conventional cotton settings are used. The feed-plate setting should be about 0.034 in. for 3-in. staple and about 0.017 in. for $1\frac{5}{16}$-in. staple.

A lot of fiber falls out during carding, especially under the lickerin and doffer comb, primarily because of the weight of the fibers rather than short fly. In many mills, a solid screen is used under the lickerin to allow no fiber to drop out at that point.

Clothing of 90s and 100s is best, but some mills are using 100s and 110s satisfactorily. There is a growing interest in metallic clothing. Rayon-carpet fiber has little tendency to load, and most mills strip only once or twice a week.

Card productions of 20 lbs. per hr. are common.

Generally, a sliver with less than 45 grains per yd. is too tender. This tenderness is a result of two few fibers per cross section in a sliver containing coarse-denier fiber.

The amount of fly, especially at carding and drawing, might alarm you at first; but most of the waste is unbroken fiber, and it can be reworked without danger. Waste losses are far less than waste losses in handling natural fiber.

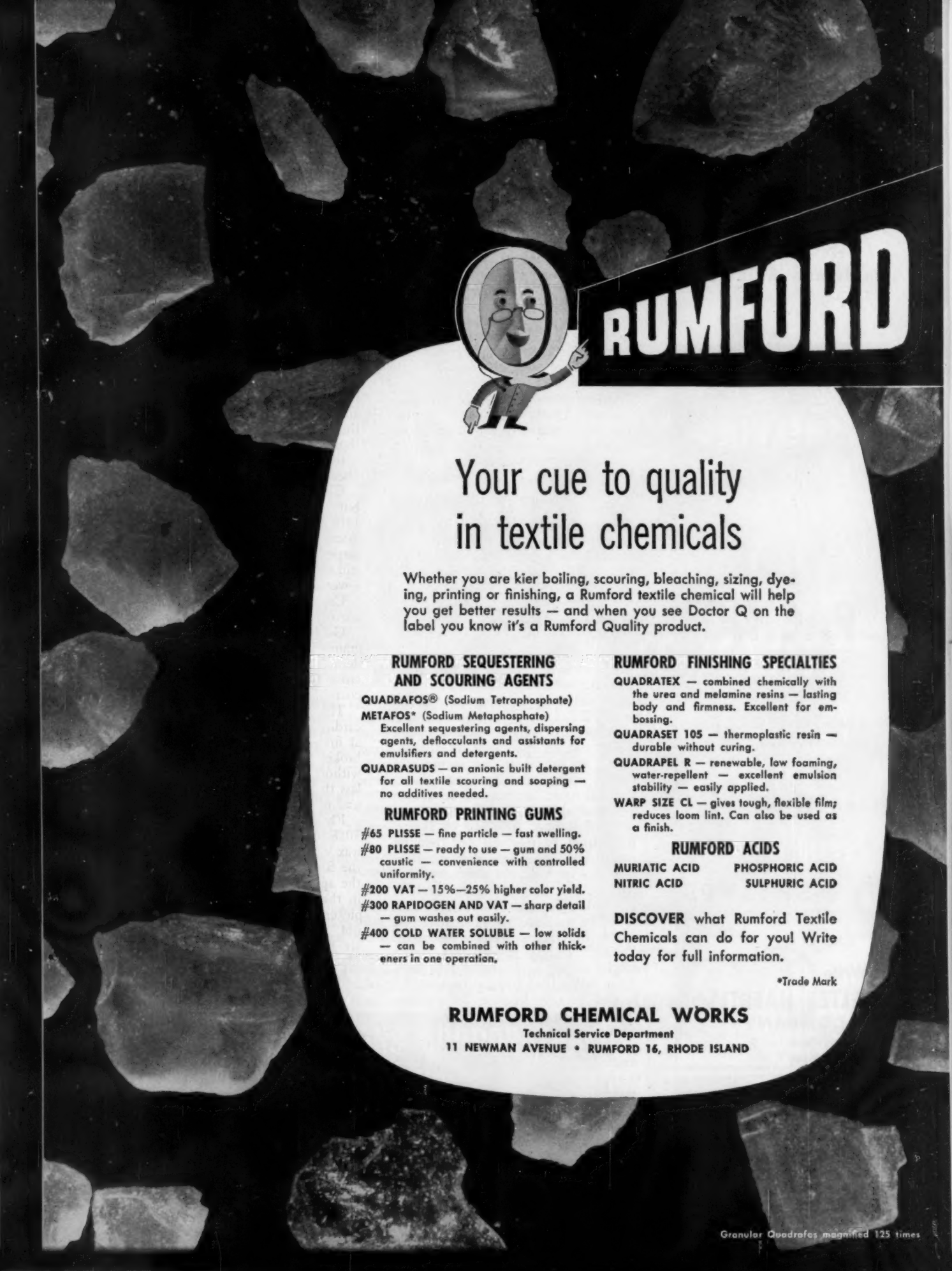
Fly can be reduced by as much as 50% by spraying the raw fiber with a wax emulsion. The emulsion softens the fiber and increases fiber lubricity; the spray heads are usually mounted in the opening equipment or on the picker hoppers. Oil-base finishes should not be used because oils, which are not always soluble in water, can affect the dye affinity of the fiber. Also, a finished carpet is rapidly soiled unless all traces of oil are removed from the fiber.

Drawing

Roll settings are important. On four-roll drawing, the setting between the first and second roll should be at least $\frac{1}{8}$ in. over the staple length. Add $\frac{1}{8}$ in. for the second-to-third-roll setting, and add $\frac{1}{4}$ in. for the third-to-fourth-roll setting. So for 3-in. staple,

settings of $3\frac{1}{8}$, $3\frac{1}{4}$, and $3\frac{3}{8}$ ins. should

grain drawing sliver can be double



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settings of 3⅛, 3¼, and 3⅜ ins. should be used from front to rear, respectively; and the maximum roll spread would be 9¾ ins.

However, not many mills have frames with such wide roll stands. Some mills have removed their third top roll and use three rolls requiring a total spread of only 6½ ins. (3⅛ ins., first to second roll; 3⅜ ins., second to third roll). These three-roll frames do a surprisingly good job. There appears to be little difference between the evenness of yarn produced from one-process, three-roll drawing and one-process, four-roll drawing.

Some frames have such narrow stands that only two rolls will give the necessary roll spread. Experimental yarns have been produced with two processes of two-roll drawing, and these yarns have been superior in evenness to those produced with one-process, four-roll drawing; however, no mill is currently producing commercial yarns with two-roll drawing. Two-process drawing is used by few mills because the added evenness is not significant enough in carpet yarns to warrant the expense.

In mills with controlled humidity, front-roll speeds on 1-in. front rolls range from 325 to 350 rpm. Larger front rolls naturally allow higher speeds.

Fly-Frame Spinning

The largest poundage of rayon carpet yarns is being spun on fly frames, and the borderline between fly spinning and ring spinning is approximately 2.5/1.

A popular singles yarn number, 0.90s, can be spun well on conventional or long-draft fly frames. Of course, with 3-in. staple, the center top roll must be removed on a conventional slubber to make the necessary roll setting. A setting of 3⅜ ins. from front to rear roll can then be made; but the single drafting zone does not provide the necessary fiber control, and the total frame draft is reduced. This process must be followed by another two-roll fly frame on which the final 0.90s can be spun. Double creeling is desirable for a singles carpet yarn. Most mill men think that a 10x5 frame is best for the second process because its package size and flyer speed give the best economic balance.

The flyer speed is the only factor limiting production; so the yarn twist is kept as low as possible. A twist multiplier of 3.75 is generally used for 0.90s yarn.

Drafts on a two-roll frame should be kept low and should not exceed five. A 0.45-hk. roving produced from 70-grain drawing sliver can be double creeled at an intermediate and spun to 0.90s. The drafts on the fly frames would be 2.65 and 2.50 respectively.

Few mills that are spinning carpet yarns have long-draft slubbers, but mills that do have them can generally use all their drafting rolls to spin 0.90s in one process. However, this yarn would not be quite as even as yarn spun on two processes of conventional frames. Mills preparing yarn with one process generally use two drawing processes.

Spinning

The spinning limit of 15.0-den., 3-in. rayon is about 5s, while 8.0-den., 3-in. rayon spins to about 10s. A 50-50 blend can be spun to about 8s.

In addition to the most popular carpet yarns (0.90s to 2.5/3), considerable interest is being shown in finer plied yarns, especially for loop-pile carpets. Of course, spinning frames are used for these finer yarn numbers; and the center top roll of conventional frames is usually replaced with a pencil roll. The pencil roll is not a necessity, but it does allow greater fiber control in the drafting zone.

Saco-Lowell Roth and Duo-Roth frames—with aprons around the nose bar, bottom middle roll, and tension pulley—have been modified for 3-in. staple by some mills by putting on a longer apron and directing it over the middle bottom roll and around the rear bottom roll. With this arrangement, the middle top roll is removed and the apron is driven by the bite of the rear rolls. Frames modified in this way have apron support throughout the entire drafting zone, and excellent yarns are being spun.

Single-creel spinning is generally used because the yarns are always plied and the doublings from plying usually give sufficient yarn evenness.

Yarns spun from 8.0- and 15.0-den. fiber, especially 15.0-den., are very hairy. There is often a tendency for these long fibers to be plucked in by the scavenger roll and bottom front roll, especially on frames with 1-in. front rolls. This trouble can be remedied by cutting new notches on the scavenger-roll lever and placing the scavenger roll further under the bottom roll.

An advantage of large spinning packages, aside from economic advantages, is that the final cone has fewer spliced or knotted ends; this advantage is important for tufting efficiency. Ring sizes up to 4 ins. are being used, and it is considered impractical to spin rayon carpet yarns on

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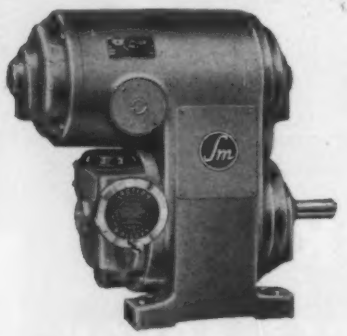

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rings less than 2½ ins. in diameter.

On spinning frames with 1-in. front rolls, roll speeds ranging from 160 to 200 rpm. are being used.

Twisting and Winding

Generally, twisting is not a problem. Large twister rings, 4 ins. or more, are desirable to keep the number of splices in the finished package low, as well as for economic reasons.

All tufters prefer cones, usually weighing from 8 to 10 lbs. Some prefer a precision wind because of the greater density; others prefer open winds. There is often a tendency to use too much tension in winding precision cones; excessive tension often causes the yarn to slough off the cone in the tufter's creel.

Barwick Dyes Tufted Rugs

CONTINUED FROM PAGE 109

is used to fluff the carpet face and shake out loose lint just before the carpet enters the dryer. Barwick uses conventional loop dryers operating at 280° F. at the entering end and producing from 2 to 6 linear yds. per min., depending on the goods being run.

Pile Is Anchored With Latex

After perching to check quality and shade, the rugs are put through a coating machine that applies approximately 1 lb. of latex emulsion to 1 sq. yd. of carpet backing. A penetrant helps to insure thorough impregnation.

The coated carpet passes over rollers face down, and the back is subjected to heat from a combination of metallic heating units and infrared bulbs.

As a final step in the finishing, the carpeting passes through a fluffing chamber where two beaters gently riffle the back of the material to help develop an even pile. Heating coils complete the drying.

A final examination is then given the carpeting, and it is ready for wrapping and shipping.

Barwick Makes Tufted Rugs

CONTINUED FROM PAGE 107

truck by a swing driven by a ½- to 1-hp. motor, depending on the carpet width.

The 15-ft. tufting machines are operated by two 10-hp. motors, one on each end of the machine. Each motor has short V-belt drives and is equipped with a Warner electric brake.

The 12-ft. machines are driven in a similar way from a 15-hp. motor on only one end of the machine.

How a Machine Is Operated

Each machine is run by an operator. His job is to rethread broken ends of yarn and to keep the machine running. Broken ends at the creel are put up by a patrolling creeler. Creelers are stationed on the upper-deck catwalks and also on the floor level. When an end of yarn is broken at the creel, the machine operator blows an air-operated whistle to call a creeler. Then he applies a jet of air to the end of the copper tubing where the yarn end is broken so that the creeler can easily see the fluttering broken end to replace it. The operator marks the carpet at each broken yarn end with a water-soluble crayon.

One inspector works with the operator at each tufting machine. She inspects the back of the carpet from the bridge. Then she inspects the tufted side of the carpet from the floor at the back of the carpet. She replaces each broken yarn end with a hand-tufting machine. The crayon marks readily show the broken ends.

Stop Motions Help

End breakages aren't as serious as they formerly were because Barwick mechanics have designed a stop motion that stops the machine as soon as a yarn end breaks. All machines are equipped with the stop motions.

The carpets are measured with a cut meter as they are tufted. Shift changes are identified by tags placed in the carpet selvages.

To hold the carpets to a standard weight, 1 sq. yd. of carpet is cut out and weighed at the beginning of each newly creeled set or at each new style. The weight is checked against standard weight information furnished the supervisor with each style of carpet. All finished rolls of carpet are also weighed for standard weights.

The carpets are finished in an adjoining department.

Three-Man Team Fixes Machines

Machine fixing and maintenance are handled by a three-man team. On big jobs, they work together; on small jobs such as starting a new creel set or changing a stitch gear, they work separately.

The looper knives have to be resharpened regularly, ordinarily every two to three weeks. The knives are replaced by the three-man mechanic team working together. Another large maintenance job done by the mechanics is to change the loopers and knives. This job is necessary only every 18 months.

The tufting department at Barwick is fully air conditioned. The tempera-

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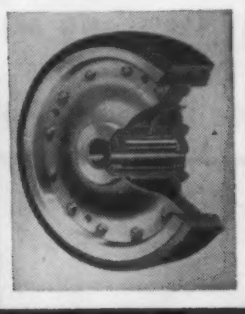

Write for Free Manual

ture is held at 75° F. in summer and 70° F. in winter. The relative humidity is controlled at 38% throughout the year.

A 12-ft machine made by Chatsworth Mfg. Co. for making patterned carpets was recently added to the mill.

As soon as the tufting machine was fastened to the floor, maintenance men began building the creel. The over-all creel frame is hung from an overhead 3-in. steel I-beam, and the frame itself is made from 1½x⅛-in. angle iron. The bottom framing is supported from the top framing by ¼-in. rods.

This creel is different from the other creels at Barwick because it is all overhead. It also extends at both the front and back of the tufting machine. Other creels are on only one side.

How To CREASEPROOF Cotton Dress Fabrics

- **Substituted urea resins with proper catalysts make cotton more acceptable in dress fabrics**
- **Realignment of drying equipment is necessary for best results**

By H. C. BORGHETTY
Rohm & Haas Co.

THE SUCCESS OF creaseproofed rayon fabrics has led to considerable interest in similar finishes for cotton goods. Early drawbacks to using urea resins on cotton included weakening of the cotton fiber because of the acidity developed by the catalysts used for rayon formulations. Newer catalysts of the organic amine type do not exhibit this effect.

While it is possible to apply substituted urea resins to cotton on conventional machines set up for rayon finishing, it is not recommended. Thin, harsh hands result if a pad-tenter combination is used for the application and drying.

This Range Is Best

The ideal finishing range consists of a pad, loop dryer, tenter, and curing box set up for continuous processing. In this system, the goods are padded, dried in the looper to 20 to 35% moisture, and completely dried in the tenter. Under these conditions of moisture, wrinkles formed in the loop dryer will be pulled out on the tenter and the fabric will have relaxed in the looper. If the moisture is less than 20% when the cloth enters the tenter, wrinkles will be difficult to remove. If moisture exceeds 35%, the fabric will not be sufficiently relaxed to produce a good hand.

Looper drying or tenter drying alone is not satisfactory. Curing should be done in range if possible.

What Formula To Use

The amount of resin to use will depend on the padding equipment, but the finished fabric should contain a total of 3.4% solids for good crush resistance. A 10% solution at 75% pickup should give 3.75% solids. Resin retention of 92% after washing will give about 3.43% solids from this formula. About ½% of an organic amine catalyst gives good fixation.

A cationic softener must be added to increase the tear strength of resin-treated cottons. Pyridine types are durable but give a greasy hand, at present unpopular with converters. They also tend to impair shrinkproof treatments. However, 0.25% to 0.5% of certain other cationic softeners will give good tear strength recovery and are reasonably durable to washing.

To increase body and fullness, a durable stiffening agent such as starch, polyvinyl alcohol, hydroxyethyl cellulose, or cellulose ethers can be added to the mix. Amounts will vary greatly with the product chosen. For polyvinyl alcohol, about 1% in the mix will give considerable effect.

Dry, Cure, and Wash

In the looper, the temperature should not be over 210° F. to prevent premature catalysis and the speed should be such that the fabric enters the frame with 25% moisture content. Drying may be completed at 220° F. or more. Curing may follow in tandem or as a separate operation at 300° F. for 3 mins. or at 350° F. for 1½ mins.

It is necessary to wash the cured fabric to remove excess catalyst and resin that would develop odors during storage. Washing may be done at 140° F. in the open or in a slack washer. The important point is to maintain a pH of 9.5 to 10 in the first part of the washer. Thorough rinsing follows; and in the last box, a softener may be added if necessary.

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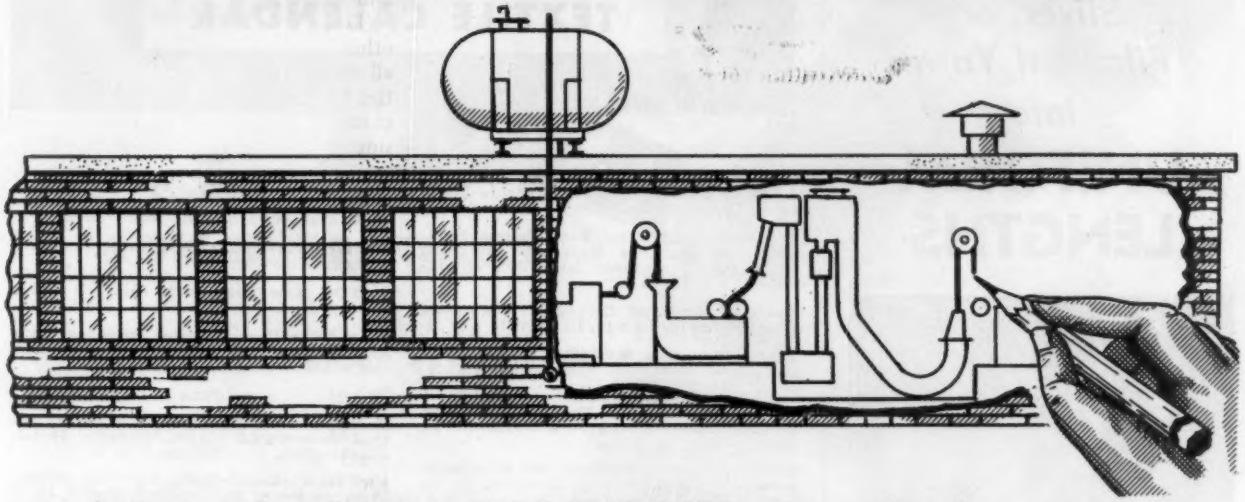

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March

AATCC, Western New York Sect., Hamilton, Ont., Canada, March 4.

Symposium on Fiber-Yarn-Fabric Relationships, Polymer Research Institute, Brooklyn Polytechnic Institute, Brooklyn, N. Y., March 5.

National Assn. of Corrosion Engineers, Hotel Palmer, Chicago, Ill., March 7 to 11.

Textile Research Institute, annual meeting, Hotel Commodore, New York City, N. Y., March 10 and 11.

Committee D-13 on Textile Materials, ASTM, Statler Hotel, New York, N. Y., March 15 to 18.

Southern Textile Methods and Standards Assn., Clemson House, Clemson, S. C., March 17 and 18.

AATCC, New York Sect., Kohler's Swiss Chalet, Rochelle Park, N. J., March 18.

Symposium on Mechanical Properties of Textile Fibers and Yarns, Canadian ATCC, Quebec Sect., Ciba Co. Conference Room, Montreal, Canada, March 18.

Canadian ATCC, Quebec Sect., Physical Science Center, McGill University, Montreal, Canada, March 19.

American Cotton Manufacturers Institute, annual meeting, Biltmore Hotel, Palm Beach, Fla., March 31 to April 2.

Southern Municipal and Industrial Waste Conference, College of Engineering, Duke University, Durham, N. C., March 31 and April 1.

April

Symposium on Textile Research, Polymer Research Institute, Brooklyn Polytechnic Institute, Brooklyn, N. Y., April 2.

AATCC, New York Sect., Kohler's Swiss Chalet, Rochelle Park, N. J., April 2.

Alabama Cotton Manufacturers Assn., 50th anniversary meeting, Biloxi, Miss., April 13 to 15.

American Society of Lubrication Engineers, annual meeting, Hotel Sherman, Chicago, Ill., April 13 to 15.

Phi Psi Textile Fraternity, annual convention, Beaconsfield Hotel, Brookline, Mass., April 14 to 16.

AATCC, Hudson-Mohawk Sect., Jack's Restaurant, Albany, N. Y., April 15.

Symposium on Mechanical Properties of Textile Fibers and Yarns, Canadian ATCC, Quebec Sect., Ciba Co. Conference Room, Montreal, Canada, April 15.

Textile Exhibition, Canadian ATCC, Sheraton-Mount Royal Hotel, Montreal, Canada, April 21 to 23.

AATCC, Western New York Sect., Buffalo, N. Y., April 22.

AATCC, New York Sect., Kohler's Swiss Chalet, Rochelle Park, N. J., April 22.

Knitting Arts Exhibition, Convention Hall, Atlantic City, N. J., April 25 to 29.

Underwear Institute, annual meeting, Haddon Hall Hotel, Atlantic City, N. J., April 25.

AATCC, Piedmont Sect., Robert E. Lee Hotel, Winston-Salem, N. C., April 30.

Cotton Manufacturers Assn. of Ga., 55th anniversary convention, Boca Raton Hotel, Boca Raton, Fla., April 27 to 29.

Delta Kappa Phi Textile Fraternity, annual convention, Lowell Tech, Lowell, Mass., April 29 and 30.

May

The Fiber Society, spring meeting, School of Textiles, Alabama Polytechnic Institute, Auburn, Ala., May 4 and 5.

International Silk Congress, Brussels, Belgium, May 9 to 14.

AATCC, New York Sect., Kohler's Swiss Chalet, Rochelle Park, N. J., May 20.

South Carolina Textile Manufacturers Assn., annual meeting, The Cloister, Sea Island, Ga., May 26 to 28.

June

Tufted Textile Manufacturers Assn., annual convention, Park Sheraton Hotel, Washington, D. C., June 2 to 4.

AATCC, Piedmont Sect., Mayview Manor, Blowing Rock, N. C., June 10 and 11.

Southern Textile Association, annual convention, Mayview Manor, Blowing Rock, N. C., June 16 to 18.

Materials Handling Exposition, International Amphitheater, Chicago, Ill., June 16 to 20.

International Textile Exhibition, Brussels, Belgium, June 25 to July 10.

American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26 to July 1.

International Congress of Scientific Research in the Textile Industry, The Centre Scientifique et Technique de l'Industrie Textile Belge, 24, rue Montoyer, Brussels, Belgium, June 27 to 29.

American Institute of Electrical Engineers, Textile Subcommittee, summer meeting, Swampscott, Mass., June 27 to July 1.

September

The Fiber Society, fall meeting, Mass. Institute of Technology, Cambridge, Mass., Sept. 8 and 9.

AATCC, Western New England Sect., Rapp's Restaurant, Shelton, Conn., Sept. 16.

Combed Yarn Spinners Assn., annual meeting, The Homestead, Hot Springs, Va., Sept. 16 and 17.

Chemical Finishing Conference, National Cotton Council, Chalfonte-Haddon Hall, Atlantic City, N. J., Sept. 20 and 21.

AATCC, national convention, Chalfonte-Haddon Hall, Atlantic City, N. J., Sept. 21 to 23.

Northern Textile Assn. and National Assn. of Cotton Manufacturers, annual convention, Wentworth-By-The-Sea, Portsmouth, N. H., Sept. 29 and 30.

Machine Tool Show, International Amphitheater, Chicago, Ill., Sept. 6 to 17.

October

North Carolina Textile Manufacturers Assn., annual meeting, Carolina Hotel, Pinehurst, N. C., Oct. 13 and 14.

National Council for Textile Education, fall meeting, sponsored by American Textile Machinery Assn., The Larches, Hopedale, Mass., Oct. 17 to 19.

AATCC, Piedmont Sect., Hotel Barringer, Charlotte, N. C., Oct. 29.

November

AATCC, Western New England Sect., Hartford, Conn., Nov. 4.

December

AATCC, Western New England Sect., Rapp's Restaurant, Shelton, Conn., Dec. 16.

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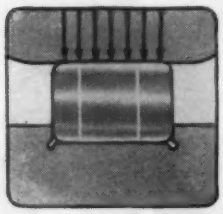

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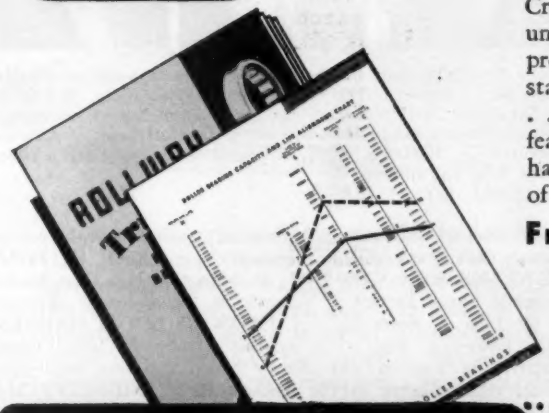

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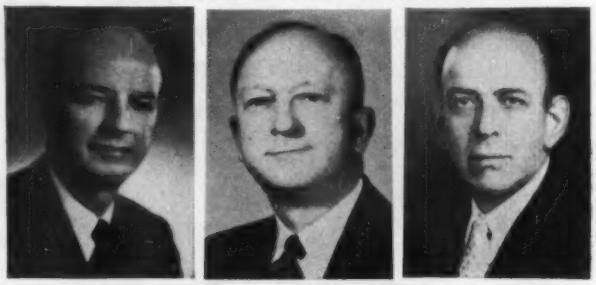
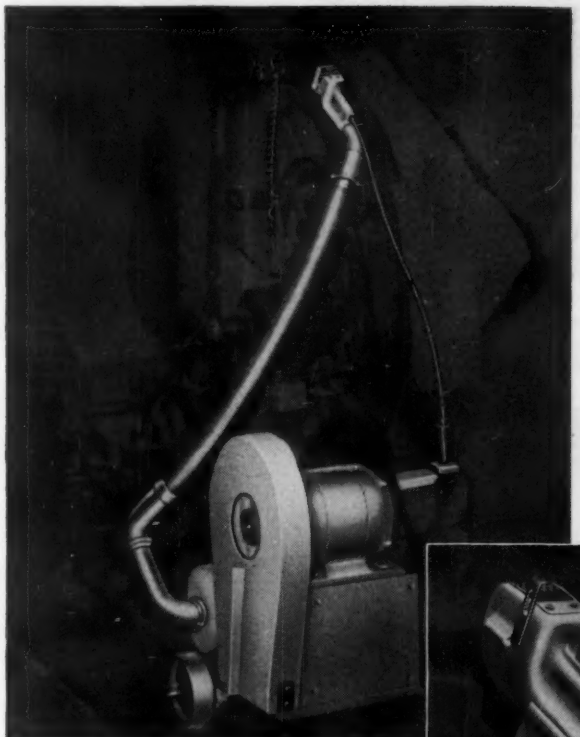
NEWS about SUPPLIERS

AMERICAN VISCOSE CORP., Philadelphia, Pa.—John H. Kemp has been transferred to the Staple Sales Div. . . . **ATLANTIC STEEL CO.**, Atlanta, Ga.—Will construct a new merchant bar and rod mill, a second electric furnace, and a new administration building. . . . **BORDEN CO.**, New York, N. Y.—William L. Abramowitz named a vice president of the Chemical Div. Dr. Sidney J. Baum named general manager of the Peabody, Mass., division. . . . **GARDNER-DENVER CO.**, Quincy, Ill., and **KELLER TOOL CO.**, Grand Haven, Mich.—Have consolidated. Keller Tool will operate as the Keller Tool Div. of Gardner Denver Co., continuing under its present management. E. V. Erickson has been elected an executive vice president of Gardner-Denver. . . . **CHARLOTTE CHEMICAL LABORATORIES, INC.**, Charlotte, N. C.—Ralph E. Howell named chief chemist and plant manager. . . . **CHEMSTRAND CORP.**, Decatur, Ala.—Robert L. Amsler appointed to the Product Development Group. Joseph A. Lopez named to the New York, N. Y., sales staff. . . . **CLEVELAND CRANE & ENGINEERING CO.**, Wickliffe, Ohio—Constructing a $500,000 shipping and receiving building. . . . **COLSON CORP.**, Elyria, Ohio—Has been purchased by F. L. Jacobs Co., Detroit,



JOHN C. COOK (left) has been named sales manager of the New York, N. Y., district of the Textile Div., Celanese Corp. of America. H. GILLESPIE SMITH (center) has been named branch manager of the new Atlanta, Ga., sales office of the Dyestuff Dept. of American Cyanamid Co. SIMON S. SELIG, JR. (right), has been elected president of the Selig Co., Atlanta, Ga.

Mich. Robert Pritzker will continue as president, and the present management team will be retained. . . . **E. I. DU PONT DE NEMOURS & CO., INC.**, Wilmington, Del.—Has formed a central Finish Section at Kinston, N. C., under the direction of Dr. Olaf A. Bredeson. . . . **EMMONS LOOM HARNESS CO.**, Lawrence, Mass.—Has appointed John F. Veach representative in Virginia and eastern North Carolina and Elmer Scharf representative in the Midwest. . . . **FIDELITY MACHINE CO.**, Philadelphia, Pa.—Lawrence Katz elected president to succeed Joseph P. Vogt, who will continue as a member of the board. . . . **J. J. FINNIGAN CO.**, Atlanta, Ga.—Earl Meyers appointed sales representative in Louisiana. . . . **GASTONIA ROLLER, FLYER, & SPINDLE CO., INC.**, Gastonia, N. C.—Has appointed John W. Long sales representative in Georgia, Alabama, and Tennessee. . . . **GENERAL DYESTUFF CO.** and **ANTARA CHEMICALS**, New York, N. Y.—Have appointed Paul J. Pernice head of the Portland, Ore., office. . . . **GENERAL ELECTRIC CO.**, Cleveland, Ohio—Philip D. Parker has retired as general sales manager of the Lamp Div. . . . **GENERAL PLASTICS CORP.**, Paterson, N. J.—Paul S. Hess appointed technical director. . . . **B. F. GOODRICH**



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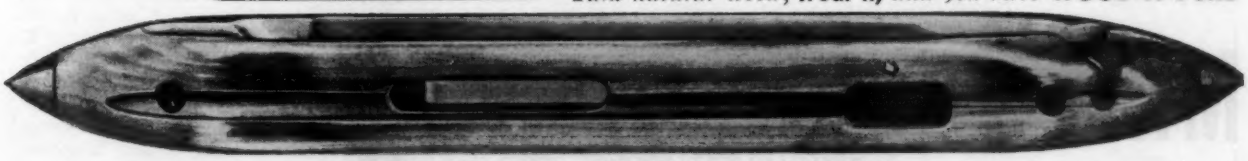

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NEWS ABOUT SUPPLIERS *(Continued)*

CHEMICAL CO., Cleveland, Ohio—F. L. McNabb appointed manager of sales development for the Hycar and rubber chemicals department. . . . **IMPERIAL PAPER & COLOR CORP.**, Glens Falls, N. Y.—Has appointed Polymer Industries, Inc., Springdale, Conn., and Polymer Southern, Inc., Greenville, S. C., to handle sales of Imperial colors. . . . **PENNSYLVANIA SALT MFG. CO., Philadelphia, Pa.**,—Has opened a new plant at Delaware, Ohio. . . . **RELIANCE ELECTRIC & ENGINEERING CO.**, Cleveland, Ohio—Is negotiating for the acquisition of Reeves Pulley Co., Columbus, Ind. The merger is subject to the approval of the board of directors of both Reeves and Reliance. Under the conditions, the two companies will merge operations in exchange for Reliance common stock and cash,

DWIGHT L. TURNER (left) has been named manager of the Atlanta, Ga., office of Arnold, Hoffman & Co., Inc.; and C. JORDAN DULIN (center) has been named manager of the Charlotte, N. C., office. JOSEPH S. HUBBARD (right) has been named manager of the Reading, Pa., office of Scott & Williams, Inc.

with Reeves shareholders becoming partners and stockholders in Reliance. . . . **PNEUMAFIL CORP.**, Charlotte, N. C.—Arch E. Cutting has been named a sales engineer to assist George E. Archer, central regional manager. . . . **ROBERT REINER, INC.**, Weehawken, N. J.—August Schoenenberg announced his resignation. . . . **JOSEPH T. RYERSON & SON, INC.**, Chicago, Ill.—Weaver E. Falberg named general sales manager and John A. Houston named assistant general sales manager. . . . **SARCO CO., INC.**, New York, N. Y.—H. L. Simmons elected president and treasurer of Sarco and assistant treasurer of Sarcotherm Controls, Inc.; L. Barfus elected president and treasurer of Sarcotherm and assistant treasurer of Sarco; R. W. Cumming and A. Milnes elected vice presidents of Sarco; R. Stevens elected vice president of Sarcotherm Controls; M. Mohr elected secretary of Sarco and F. Schneiderman elected secretary of Sarcotherm. . . . **SCOTT & WILLIAMS, INC.**, Laconia, N. H.—Has purchased the Knitting Machine Div. of Brinton Machine Co., Philadelphia, Pa. Brinton will continue to operate the Brinton Foundry, Inc. Scott & Williams will create a new division to be known as the Brinton Fabrics Machine Div. to

GEORGE B. GREENWOOD (left) has been elected a vice president of Robert Gair Co., Inc., New York, N. Y. WALTER M. GREER (center) has been named a sales representative for the Industrial Div. of Texize Chemicals, Inc., Greenville, S. C. ERNEST W. FANNING (right) has been appointed Southern sales manager of H. F. Livermore Corp., Boston, Mass.

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NEWS ABOUT SUPPLIERS *(Continued)*

expand the manufacture of underwear and outerwear machines. David Brinton and Messrs. McDowell and Olachea, with other personnel, will join the Scott & Williams organization. . . . **SCOTT TESTERS (SOUTHERN) INC.**—Has erected a new plant in Spartanburg, S. C. John E. Hargreaves is general manager. John Klinck continues as sales representative . . . . **J. E. SIRRINE CO.**, Greenville, S. C.—George Wrigley has retired from partnership. . . . **SUPREME KNITTING MACHINE CO.**, Ozone Park, N. Y.—Has completed arrangement with C. I. T. Corp. that will make machinery available on installment terms. . . . **SWIFT & CO.**, Chicago, Ill.—G. H. Hallenbeck named head of the soap department. . . . **UNIVERSAL WINDING CO.**, Providence, R. I.—Dr. Anthony Moos elected a vice president.

COTTON MILLS

Ansonia Mills, Inc., New York, N. Y.—Leonard K. Berkowitz and David F. Squire have purchased all the common stock of this company. Mr. Berkowitz will be board chairman and treasurer, and Mr. Squire will serve as treasurer.

Bamburg Textile Mills, Augusta, Ga., has reorganized the production area of its plant. An additional 2,304 spindles and 53 Draper looms have been installed.

Bell Textile Co., New York, N. Y., is completing an addition to its Belcraft plant at Dalton, Ga., that will house jacquard looms for weaving bedspreads. The company is enlarging its plant at Calhoun, Ga., for the production of carpets and rugs.

Cone Mills Corp., Greensboro, N. C., is building a new 1,080-loom denim plant in San Marcos, Tex. Architect-engineer is Lockwood Greene Engineers, Inc.

C. R. Daniels, Inc., Weldon, N. C., has almost doubled its previous capacity of spinning and weaving. Much of the textile equipment has been moved from the company's plant at Daniels, Md., to Weldon.

Dyersburg Cotton Products Co., Dyersburg, Tenn., has installed two additional blending feeders in the cotton-opening room and two lines of Aldrich cleaning equipment.

Firestone Textiles, Inc., Gastonia, N. C., has installed 20 Saco-Lowell large-package spinning frames to replace 20 old conventional frames.

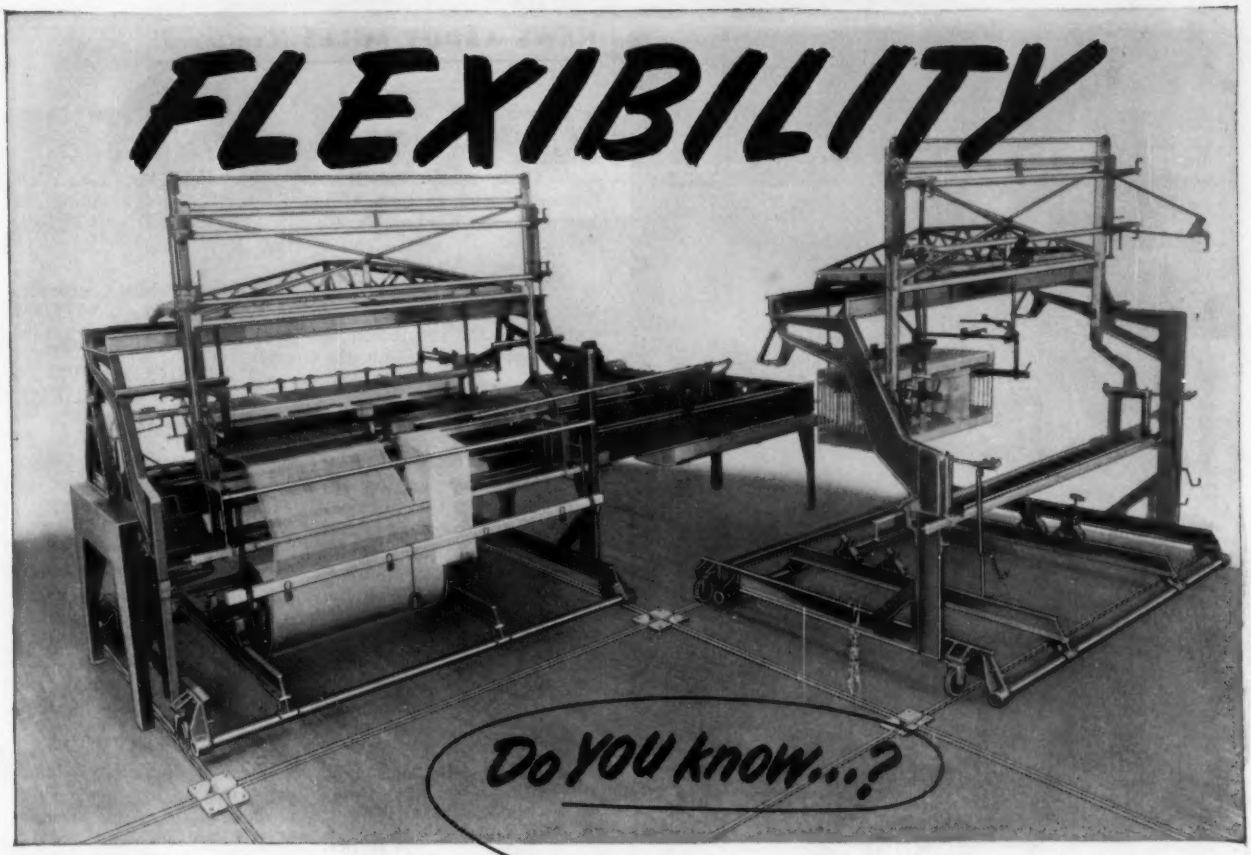
Hart Cotton Mills, Tarboro, N. C., has completed the construction of a 35,000-sq.-ft. warehouse.

Hayes Cotton Mills Co., Lenoir, N. C.—New York stockholders in this mill have sold their interest to R. Barton Hayes, mill president, and associates.

Joanna Cotton Mills, Joanna, S. C., plans to modernize its spooler room. A 75x108-sq.-ft. addition will be constructed. The company will purchase five Model D spoolers and four warpers from Barber-Colman Co. The overall cost is estimated at about $300,000.

Minnette Mills, Grover, N. C., plans to construct a new building that will add 14,000 sq. ft. of manufacturing space. Additional piece-dyeing equipment and a new tenter frame will be installed. J. S. Mitchum, Shelby, is the contractor.

Springs Cotton Mills, Ches-



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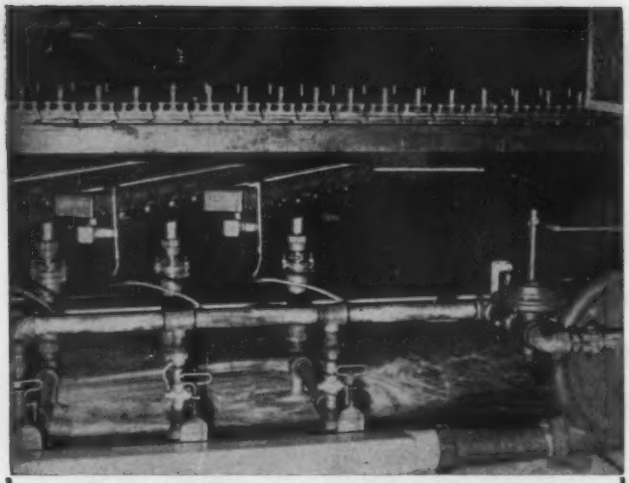

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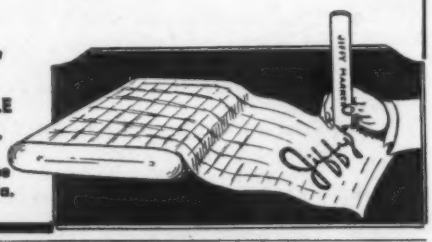

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NEWS ABOUT MILLS *(Continued)*

ter, S. C., will build a 50x 100-ft. swimming pool and bathhouse at the Springmaid Golf Club, similar to those previously built at Fort Mill, Lancaster, and Kershaw, N. C.

Summerville Mfg. Co., Summerville Ga., has started a modernization program that will include the installation of new equipment in both the spinning and weaving departments.

West Point Mfg. Co., West Point, Ga., is planning to build a new mill unit at Fairfax, Ala.

Woodside Mills, Greenville, S. C., is planning a $175,000 expansion program at its Liberty plants.

WOOLEN AND WORSTED MILLS

American Woolen Co., Boston, Mass., has signed a 16-year lease with the Pittsfield (Maine) Improvement Association to occupy 45,000 sq. ft. of space in a new spinning mill that will be built on the site of the old Pioneer Mill at Pittsfield. The plant will spin woolen and synthetic-fiber yarns for American's New England mills. Production is scheduled for next spring.

George W. Bollman Co., Adamstown, Pa., has purchased the wool-felt-manufacturing equipment and inventories of Merrimac Hat Corp., Amesbury, Mass.

French Worsted Co., Woonsocket, R. I., has installed new equipment for the expansion of its yarn production.

Archibald Holmes & Son, Philadelphia, Pa., has begun the production of tufted carpeting.

Rosamond Woolen Co., Almonte, Ont., is installing carding and spinning equipment purchased from the former Joseph Simpson plant in Toronto, Ont.

Seamloc Carpet Co., Sanford, Me., recently organized, has taken over about 60,000 sq. ft. in the Goodall-Sanford, Inc., plant. The new company also has purchased machinery and facilities from Goodall-Sanford at a reported price of $340,000.

Sheerr Bros. & Co., Philadelphia, Pa., has merged its subsidiary, the Arms Textile Mfg. Co., Manchester, N. H., with Crown Mfg. Co., Pawtucket, R. I. There will be no change in the present operations.

Stickley Specialty Yarn Corp., Charlotte, N. C., recently organized, has begun the production of woolen-spun yarn.

David Traum Co., New York, N. Y., has formed the Columbia-Minerva Corp. to lease and operate the hand-knitting division of James Lees & Sons Co., Bridgeport, Pa.

SYNTHETICS MILLS

Arlin Mfg. Co., Lowell, Mass., has opened a plant at 12 Perkins St. to produce Arlin reflective yarn.

Schwarzenbach-Huber Co., Juniata Mill, Altoona, Pa., has ordered a new high-speed loom.

Textron, Inc., Providence, R. I., has plans for an expansion program under way at its plants in Machias, Me., and Newmarket, N. H.

SPRINGS COTTON MILLS recently completed an addition (upper right) to its bleachery at Grace, S. C.

Mount Hope

LET US DEMONSTRATE

SELVAGE UNCURLERS

on your own materials!

Doubled Selvages can be eliminated

Loose, curled selvages can be handled

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MOUNT HOPE SELVAGE UNCURLERS will not only *prevent Doubled Selvages* but will also *remove Doubled Selvages* before they become set in the processing of fabrics.

ACCURATE GUIDING of such materials is now possible. Used in conjunction with Mount Hope Guiders, the Uncurlers straighten and tighten slack or curled selvages so as to allow the guiders to operate properly—*EVEN ON TRICOT.*

MOUNT HOPE MACHINERY COMPANY

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ELECTRIC STOP MOTIONS

"WESCO" TOPS THE WORLD'S BEST KNITTING MACHINES

FOR UNDERWEAR OUTERWEAR HOSIERY

PRODUCTION WISE - IT'S WESCO

USED ON ALL THESE KNITTING MACHINES:

Bentley	Edmos	Mellor, Bromley	Stibbe
Blackburn	Fidelity	Ordnance Gauge	Supreme
Brinton	Jacquard	Precision Knitters	Tompkins Bros.
Cooper	Lamb	Scott & Williams	Wildman
Crane	Leighton	Stafford & Holt	Wildt

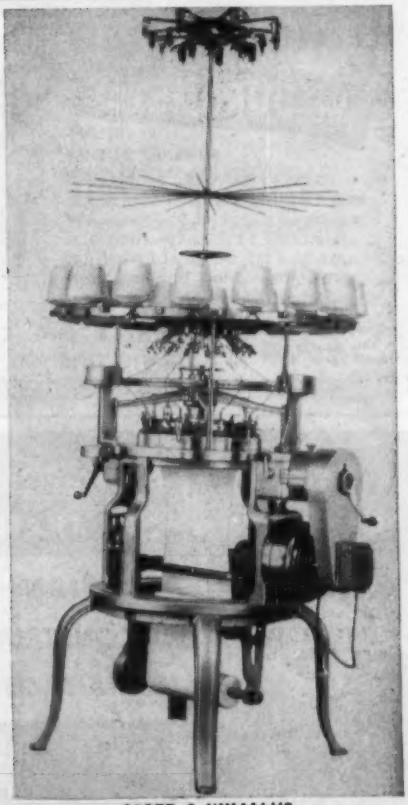
WESCO stop motions were especially designed and built to give perfect protection against knitting breakdowns, broken needles, unnecessary press-offs, smashes and wasted yarn. Always specify WESCO for trouble-free production when ordering new machines.

RELIABLE YET SIMPLE—THAT'S WESCO

STOP-MOTION DEVICES CORPORATION

1471-77 Fulton St. Brooklyn 16, N.Y.

Another of a Series of Knitting Machine Builders. Others to follow



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Multi Feed Revolving Cylinder Plain Machine

CREATED FOR THE TEXTILE INDUSTRY
the DUROMETER
FOR TESTING
WINDING DENSITY
Created to solve the problem of maintaining uniform density for unwinding in later processes, the DUROMETER saves time and money. Tests density of windings on spools, cones, bobbins, cops and package dyeing tubes.
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RAYON PLANTS & TEXTILE MILLS
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NEWS ABOUT MILLS *(Continued)*

KNITTING MILLS

Arna Hosiery Mills, Inc., Memphis, Tenn., has been incorporated with a capital stock of 1,000 shares at $100 each.

Art-Kraft Knitwear Co., Maple Shade, N. J., has moved to larger quarters at 23 Academy St., Williamstown, N. J.

Brenton Textiles, Inc., Statesville, N. C., has begun the manufacture of sweaters in the former Walton Hosiery Mills plant. B. M. Edgar is president.

Burlington Mills Hosiery Co., Lachine, Que., has begun limited production of 400-needle seamless hosiery. Additional machinery is being installed in a new unit at 130 St. Joseph St.

Elco Ltd., Toronto, Ont., has completed the construction of a new knitting plant in Toronto that contains about 11,000 sq. ft. of floor space.

Forstmann Woolen Co., Passaic, N. J., is adding the manufacture of women's full-fashioned sweaters to its production.

Gotham Hosiery Co., New York, N. Y., has acquired Meridan Industries Inc., Meridian, Miss., as a wholly owned subsidiary.

Hanes Hosiery Mills Co., Winston-Salem, N. C., will soon move into the plant at 1245 Ivy Ave. that was recently occupied by Duplan Corp. Hanes has an expansion program under way that includes the building of a $500,000 addition. A low bid of $165,000 has been received from H. I. Coble Construction Co., Greensboro, N. C., for the construction of a warehouse.

Hazel Knitting Mills, Burlington, N. C., has purchased the Robbins Knitting Co., Spruce Pine, N. C.

Hill's Hosiery Mills, Daisy, Tenn., has been organized for the manufacture of boys' and misses' socks and anklets. C. H. Hill is manager of the firm.

Huntley Hosiery Co., Charlotte, N. C., has acquired all the assets of Carolyn Hosiery, Inc., Charlotte. Operations will be consolidated under the Huntley name.

L. &. J. Knitting Mills, Inc., Brooklyn, N. Y., has installed nine new four-section Reiner full-fashioned sweater machines. The company has also purchased 4 looping units from Southern Textile Machinery Co. About 5,000 sq. ft. of floor space will be added.

Moreck Hosiery Co., Perkasie, Pa., will produce only seamless hosiery in the future.

Quitman Knitting Co., Quitman, Miss., has awarded the contract for $34,490 for the electrical work in its new mill addition to Service Electric Co., Meridian, Miss.

Royce Hosiery Mills, Fleetwood, Pa., has leased a portion of the third floor of the former Nolde & Horst plant, 9th and Douglas Sts., Reading, Pa.

Seam-Less Hosiery Co., Reamstown, Pa., has installed the first shipment of Fidelity 400 seamless-hosiery machines.

Standard Hosiery Mills, Inc., Burlington, N. C., has purchased the property of Oneida Mills at Graham, N. C., from Burlington Mills for use in the expansion of its warehouse and other facilities. The building contains 120,000 sq. ft. of floor space. Burlington Mills will transfer its main-office supply and service from this location to its Piedmont Heights Div., where an additional building is now under construction.

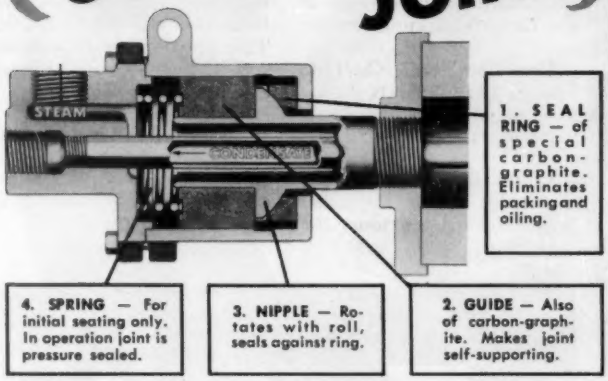
Tenn-Rock Hosiery Co., McMinnville, Tenn., subsidiary of Rockford Textile Mills, Rockford, Ill., has increased its authorized capital stock to $300,000.

Virginia Underwear Corp., Martinsville, Va., is changing its name to Walker Knitting Co. S. S. Walker is president.

DYEING AND FINISHING PLANTS

Caledonian Dye Works, Philadelphia, Pa., has completed a modernization program that includes the installation of two 400-tube Smith, Drum package-dyeing ma-

Only 4 internal parts in this self-supporting Johnson Joint


STEAM
1. SEAL RING — of special carbon-graphite. Eliminates packing and oiling.
4. SPRING — For initial seating only. In operation joint is pressure sealed.
3. NIPPLE — Rotates with roll, seals against ring.
2. GUIDE — Also of carbon-graphite. Makes joint self-supporting.

With this 3000 Series Type S-B2 Joint, an assembly plate can be added at any time; it is used with the Johnson Syphon Elbow, to hold internal parts in position when the head is removed. Write for Bulletin No. S-2001.

The Johnson Corporation

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Now, with revolutionary new Oakite RUSTRIPPER, you can remove not only rust, but also strip paint and grease from salvaged metal parts in ONE operation. Oakite RUSTRIPPER may be used either hot or cold depending upon the job. Because it's an alkaline material, it needs no special stainless steel tanks; will not cause dimensional changes; gives off no troublesome fumes. For more details about amazing Oakite RUSSTRIPPER, call your local Oakite Man today, or write Oakite Products, Inc., 42 Rector Street, New York 6, N. Y.

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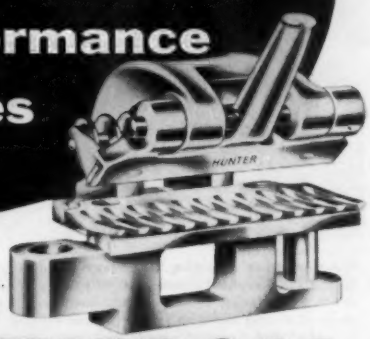
Over 2 Years Performance proves this



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saves you costs of multiple tentering units

Completely successful installations demonstrate these advantages:

- Does away with multiple tentering units thereby reducing floor space reqirements with resultant savings
- Operates as regular clip on any standard frame
- Accommodates overfeeding if frame equipped with James Hunter Machine Co. overfeed device
- Same operating speeds as conventional clips
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- Clip and overfeed equipment cost very reasonable

This Universal Tenter Clip (Dungler System) is made and sold in the United States and Canada exclusively by Marshall and Williams.

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High Speed Tenter Frame • Complete Line of Tenter Clips • Overhead Drive Mercerizing Tenters • Tenterettes — short tenters (30", 80" and 100" long) built to any maximum width, with straight or hinged rails • Batchers — constant tension or tensionless • Swing Plaiters — anti-friction bearings throughout, designed for easy cloth alignment • Let-Off Stands — movable, with casters, or fixed base, swiveling for easy cloth alignment

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HIGH SPEED RECORDING TENSIOMETER

- Rugged
- Compact
- Convenience of use
- Designed for normal plant conditions

The High Speed Recording Tensiometer was developed by the Celanese Corporation of America for measurement and proper regulation of yarn tension in the textile industry. However, the instrument is equally applicable to the study of tension variation in fine flexible wire, or to the study of surfaces in contact with a running yarn or wire system. Small bearings can also be introduced into the system resulting in tension variation patterns characteristic of mechanical parts of the bearings.

The instrument has a frequency response up to 120 cycles per second, and a sensitivity as high as four millimeters deflection on a standard direct writing recorder per gram of tension in the yarn. Under normal plant conditions, heavy machine and plant vibrations are cancelled by using two beams with bonded resistance strain gages working to opposition. The record produced is a true record of tension variation only. Stops are provided to prevent overstressing these beams. To use the instrument it is only necessary to place the pulleys over the running yarn and twist the sensing head until the yarn forms an S shape over the pulleys.

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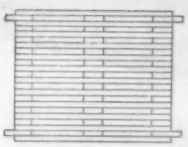
MANUFACTURERS OF CUSTOM-BUILT LABORATORY EQUIPMENT



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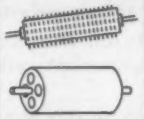
SLATS

Plain & Pinned All Sizes & Shapes Hard & Soft Woods



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the SIMCO company
920 Walnut Street, Lansdale, Pa.

NEWS ABOUT MILLS *(Continued)*

chines. The plant's boilers have been converted from coal to fuel oil.

William Carter Co., Needham Heights, Mass., will construct a 24,000-sq.-ft. knitgoods finishing plant at Thomaston, Ga. The new plant will finish goods made at the Carter mill in Barnesville.

Dominion Textile Co. Ltd., Magog, Que., expects to install an open-width bleaching range in its present building.

Lyman Bleachery Div., Pacific Mills, Lyman, S. C., has begun building a dam on the Middle Tyger River that will form a 1½-billion gal., 515-acre reservoir. Lockwood Greene Engineers, Inc., is the engineer. Cost will be about $250,000.

Rock Hill Printing & Finishing Co., Rock Hill, S. C., will construct a new division to be known as the Grier Div. The proposed new addition will be located in the former Samarkand rug plant.

Tex-Lane Dyeing & Finishing Corp., Brooklyn, N. Y., has purchased the plant formerly operated by Tex-Lane Dyeing Co.

Frederic B. Barnet and **E. Monroe Hornsby** have been elected vice presidents of Fulton Bag & Cotton Mills, Atlanta, Ga. New directors include **James D. Robinson, Jr., William E. Mitchell, Robert O. Arnold,** and **Herbert R. Elsas.**

Howard Bergman has been named vice president of Associated Spinners, Inc., Gastonia, N. C.

S. M. Cauble, Jr., has been named assistant general manager of Valdese Mfg. Co., Valdese, N. C.

Frank D. Cheney has resigned as chairman of the board of Cheney Bros., Manchester, Conn. He will continue as a member of the board.

Laurens D. Dawes has been elected to the board of directors of Munsingwear, Inc., Minneapolis, Minn.

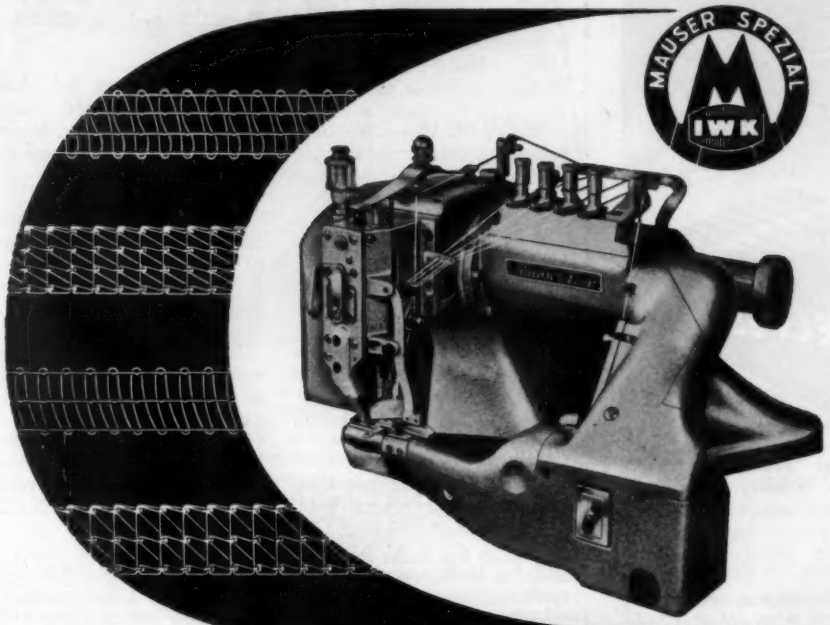
Aubrey D. Dow has been named overseer of dyeing at American Woolen Co., Tifton, Ga.

ELLIOTT I. PETERSEN has been appointed vice president of operations at Alexander Smith, Inc., Yonkers, N. Y.

Everett C. Drake has been named vice president and director of all of the cotton mills of M. Lowenstein & Sons, New York, N. Y.

German H. H. Emery has been named vice chairman of the board of Riegel Textile Corp., Trion, Ga. **William E. Reid** has been elected president.

MAUSER SPECIAL Feed-off-the-arm Flat-seam Machine MAUSER LOCK



with trimmer and differential feed dog producing an extremely elastic 4-needle-covering seam with one lay in thread for the trimming, sewing together and hemming of all kinds of hosiery as well as elastic material.

- Number of needles 3 and 4
- Breadth of seam 7/32" and 9/32"
- Number of stitches per minute up to 2800 and 3400

The automatic lubrication system and the oil circulation controls greatly facilitate the service and maintenance of the machine.

Illustrated leaflets will be supplied on request.

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NEWS ABOUT MEN *(Continued)*

P. W. Eshelman has retired as president of Wilkes Hosiery Mills, North Wilkesboro, N. C.

Stanley M. Finkel has been named executive assistant to the chairman of the board of Botany Mills, Passaic, N. J.

Peter M. Fraser and **Francis J. Rue** have been elected directors of Alexander Smith, Inc., White Plains, N. Y.

Robert J. Frober and **Sam M. Orr, Jr.**, have been elected to the board of Hanes Hosiery Mills Co., Winston-Salem, N. C.

Joseph Guinance has been named assistant general manager of Clover Spinning Co., Clover, S. C. **T. C. McDearmid** has been named superintendent.

Kenneth C. Horne has been named superintendent of the worsted division of James Lees & Sons Co., Bridgeport, Conn.

Neill Houston has retired as vice president, treasurer, and a director of the Bell Co., Worcester, Mass.

Thomas Hunter has been promoted to overseer of weaving at Continental Mills, Lewiston, Me.

Ralph B. Knapp has been named administrative assistant at Botany Mills, Passaic, N. J

Raymond J. Lee has been elected chairman of the board of Lockport Felt Co. **Mrs. Sally T. Lee** has been named vice president and **A. W. Sterritt** has been elected a director.

Leo C. Levin has been elected treasurer of Native Laces & Textiles, Inc., Hightstown, N. J. **Ira Birnbaum** has been named secretary.

J. Spencer Love has been elected chairman of the board of Pacific Mills, Boston, Mass. **J. Neal Dow** has been elected president.

Yates Mauney has been named vice president in charge of manufacturing for all the plants of Hudson Hosiery Co., Charlotte, N. C. **Frank Tucker** has been named general manager and **Oren Rice** superintendent at the Shelby, N. C., plant.

W. L. McBrayer has been named resident manager of the Florence Plant of Cone Mills Corp., Forest City, N. C. He succeeds **Yates Smith.**

Wallace B. Miller has resigned as vice president of Rockford Textile Mills, Inc., Rockford, Ill.

W. J. Peacock has been named vice president of Borden Mfg. Co., Goldsboro, N. C. **E. L. V. Caviness** has been named assistant secretary.

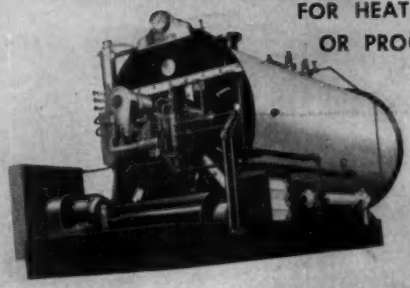
Lawrence G. Reid has been elected secretary of Washington Mills Co., Winston-Salem, N. C.

H. A. Reinhardt has been named director of the newly created engineering and research division of Bigelow-Sanford Carpet Co., Inc., Thomp-

MORGAN S. CANTEY (left) has been elected secretary of West Point Mfg. Co., West Point, Ga. He succeeds EDGAR L. HENDERSON, JR., (right) who will continue as controller.

STEAM

FOR HEAT
OR PROCESS



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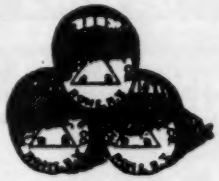

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Invisible Thief
Hold YOU Up!

Make Every Day More Highly productive on
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MILTON aluminum alloy Tricot and Section Beams feature CONTINUOUS WELDED CONSTRUCTION

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NEWS ABOUT MEN *(Continued)*

sonville, Conn. Robert J. Jackson has been named assistant director.

Richard C. Remmey has been named president of Mojud Hosiery Co., Inc., New York, N. Y., succeeding **John K. Voehringer, Jr.**, retired.

Nelson J. Rohrbach has resigned as vice president and executive head of the products division of Botany Mills, Passaic, N. J.

Robert F. Sambleson has been elected mill manager of the Fieldcrest Electric Blanket Mill, Spray, N. C.

E. W. Schenck has been named vice president and general manager of Portage Hosiery Co., Ripon, Wis. He will continue as vice president and treasurer of the parent company, Ripon Knitting Works.

Monroe Seligman has resigned as vice president of Champlain Spinners, Inc., Whitehall, N. Y.

James A. Stevenson, vice president, has assumed the additional duties of plant manager of Bradford Dyeing Assn., Bradford, R. I. He succeeds

DR. EDWIN L. LOTZ has been named general manager of Glass Fabrics Finishing Corp., Cedar Grove, N. J.

John A. Pawson who retired.

Benjamin W. Streifler has been named president of Nazareth Mills, Inc., Nazareth, Pa.

Robert M. Vance has been elected vice president of Clinton Cotton Mills and Lydia Cotton Mills, Clinton, S. C.

Charles R. Walters has been elected a vice president of Erwin Mills, Inc., Durham, N. C. **D. St. Pierre du Bose** has been elected a director.

OBITUARY

Charles H. Carter, 80, retired president and a founder of Portland Woolen Mills, Portland, Ore.

C. Langdon Cheves, vice president in charge of sales for Daniel Construction Co., Greenville, S. C.

Henry M. Clinton, 59, overseer of the cloth room of the Springsteen Plant of Springs Cotton Mills, Chester, S. C.

Sumter L. Crolley, 65, former superintendent of Hermitage Cotton Mills, Camden, S. C.

Henry L. German, 73, a member of the senior consultant board and a former vice president and director of Jantzen, Inc., Portland, Ore.

Mortimer K. Goulder, 71, president of Goulder Co., New York, N. Y.

Edgar S. Kennedy, 57, director of the Textile Research Dept. of American Viscose Corp., Philadelphia, Pa.

Morris Kirschenbaum, 72, retired president of Fremont Thread Co., New York, N. Y.

William M. Moore, 66, retired superintendent of Broad River Mills, Blacksburg, S. C., and Musgrove Mills and Globe Mills, both in Gaffney, S. C.

R. Clyde Williams, a director of Exposition Cotton Mills Co., Atlanta, Ga.

POSITIONS OPEN

We can place—LACE MILL MANAGER; mgrs., supts., overseers and fixers for knitting mills; sweater supt.; woolen, worsted, cotton and rayon mill mgrs., supts., asst. supts. and designers; asst. supt. jacq. rayon cloth mill; coated fabric expert; night supt. cot. bleach., dye. and finish, plant; pile fabric supt.

OVERSEERS for cotton card. and spin.; wstd. scour., card., comb., draw. and spin.; dyeing pile fabrics; power sewing machines; knit goods dye. and finish.; lace-net dye.; woolen weav., Midwest. SECOND HANDS woolen and shoddy carding.

CHEMISTS and laboratory men for mills also for demonstrating and selling; mechanical engineers, master mechanics, plant engineers, designers, draftsmen and machine shop foremen; development engineer for firm building knitting mach.

SALESMEN for garnetts and soap; industrial engineers—time study men; tex. school graduates; sewing mach. fixers; foreman French combs.

If you are available for a good paying position in textiles, it will pay you to have your application in our files. Negotiations are confidential. No fee to be paid unless you accept employment through us.

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GRADUATE MECHANICAL ENGINEER OR TEXTILE ENGINEER

WITH BROAD MECHANICAL ENGINEERING TRAINING

is needed by manufacturer of high standing located in Southeastern Massachusetts. Primary interest in industrial research essential. Work involves fiber technology, process development and new product research. Should be recent graduate, with military service completed. 3-5 years industrial research experience desirable but not essential. Salary dependent on qualifications.

P-5625, Textile World
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CHICAGO: 520 N. Michigan Ave. (11)
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SELLING OPPORTUNITY offered: Salesman wanted—textile machine parts. No objection to non-conflicting lines. Middle West and Far West territories open. SW-5672, Textile World.

POSITIONS WANTED

QUALITY CONTROL New York or Mill. 40 years experience, silk rayon and cotton manufacturing and finishing. PW-4848, Textile World.

THROWING MILL Supt. or manager. Twenty-two years experience. Quality throwing rayon, nylon, dacron for hosiery tricot, lace and specialty work. Thorough knowledge quality control, cost and incentives. Labor relations and references excellent. Willing to go anywhere. PW-5286, Textile World.

TEXTILE GRADUATE—28, single 5 years mill experience. Chemist. Dyer asst. & quality control. Resume of experience upon request. PW-5598, Textile World.

(Continued on following page)

NARROW FABRICS

Experienced Superintendent and Cost Accountant seeks position with Woven Label, Trimming or Elastic Fabric Manufacturing Concern.

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FOR SALE

(Additional For Sale Advertisements on following pages)

Partial Listing

200—UNIVERSAL #50 WINDERS
3—RUF HOLLOW SPINDLE TWISTERS
3—FOSTER SKEIN TO CONE WINDERS
1—6 SPINDLE UNIVERSAL #8 TUBER
1—SCOTT MODEL Q TESTER 2000 LB. CAPACITY
1—16 SPINDLE SARGENT BALLING MACHINE

N. Y. C. REPRESENTATIVES FOR NEW UNIVERSAL WINDING CO. MACHINERY

Gaines
FOR BEST VALUES IN REBUILT TEXTILE MACHINERY
GAINES TEXTILE MACHINERY CO., INC.
141 WEST 17TH ST., NEW YORK 11, N. Y.

WANTED
Small Universal Rotoconers
List Your Surplus Equipment With Us

FOR SALE—FINISHING MACHINERY

27—50" S/S VV Dye Jiggs
1—50" Morrison 3 Roll Calender
1—50" VV 3 Roll Calender
1—50" Rice Barton & Fales 2 Colors and 1 Embossing Printing Machine Combination
1—Textile 20'x90" (closed gears) Tenter Frame
2—66' face Birch Bros. Scutchers
2—80" Davis & Furber 36 Roll Double Acting Napping Machines
1—S/S Cook DeTwister
3—Curtiss & Marble Doublers & Tacking Machines
1—Gas Fired Curing Oven 60" face

Also Available: Dry Cans, Quetchers, Reeves Drives, Spare Calender Bowles, Motors, etc. *Write for Catalogue.*

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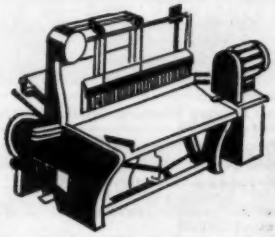

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This service is aimed at helping you, the reader of TEXTILE WORLD, to locate used and surplus new textile machinery and equipment not currently advertised. (This service is for user-buyers only.)
First, read the dealer ads on the following pages. A 5-minute study may locate the equipment now.
Second, send in the specifications of the equipment wanted on the coupon below, or on your own company letterhead, to
Searchlight Equipment Spotting Service
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MILLS A (Woolen) and B (Plush)

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WOOLEN • WORSTED • PLUSH • AUTO CARPETING • UPHOLSTERY

WINDING—All Types

2—Foster 100-spdl. x 7" Tr. Mdl. 102 Wood Tube Winders, Ser. 2671K, 2672K, GE 220/440 V M.D.
4—Abbott Mdl. 65 Automatic 100-spdl. x 6" Tr. Wood Tube Winders. Bobbin Hoppers. Knotters, etc. GE 5-HP 220/440 M.D. Ser. Nos. 1333, 1368A, 1369, 1392B.
1—Whitin Mdl. A Automatic Bobbin Loader with attachments for 75-spdls. of Schweiter Winding, yr. 1953.

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Every Kettle is FULLY ENCLOSED, STAINLESS STEEL. Foxboro Temperature Controls. Motor drives 440V. Hand Set Timers with signal lights:
1—J. Hunter 7' x 7'-6" x 3', yr. 1939.
5—R&L 7' x 8' x 5', yr. 1941.
1—R. Hunt Trushade 7'x8'x5', Ser. No. 6287, yr. 1940
4—R&L 11' x 8' x 5', yr. 1942.
5—J. Hunter 11' x 7'-6" x 5', yr. 1945.
2—J. Hunter 70" x 42" x 40" (SMO 316) 1947-8.

LOOMS

89—C&K 82" Mdl. W-3 Non Convertible 4x1 Box Automatic Looms. Fully equipped including stands for 2 or 3-beam work. 440V M.D. L/O No. 15,157 to 16,601.
2—C&K 82" Mdl. W-3A Non Convertible 4x1 Box Auto. Looms. Fully equipped including stands for 3-beam work. L/O No. 17,504.
24—Double 54" Plush Looms. 18 Harness Hd. Motions plus 8 Cams. 66½"-67" Reedspace. Beams, Harnesses, 3-HP M.D., and also spare parts. Now set to run at 110 picks/min.
40—Double 54" Plush Cam Looms to similar specifications. Now set to run at 115 picks/min.
8—Wire Looms. 6 Harness cams. 71" reed. M.D.
6—Wire Looms. 15 Harness gem head. 68" reed. M.D.
2—Wire Looms. 12 Harness gem head. 39" reed. M.D.
60—C&K 82" W-3 Convertible Type 4x1 Box Auto. Looms.
86—C&K 82" Mdl. W-3A Non Convertible Type 4x1 Box Auto. Looms. L/O 16,602. Equipped for 2-beam work.
54—Draper 72" Mod. D Sgl. Shuttle 16 H. Dobby Hd. Auto. Looms. Order #6430 & 6589. 2-HP 440/60/3 Mtr. Dr. Pick Clocks. R.I. Elec. Warp Stops. Beams.
16—C&K 1248 Hook Dble. Lift Dble. Cyl. Jacquards (NEW)
36—T. Halton 1200 Hook Sgl. Cyl. 3-Position Hvy. Construction Jacquards (NEW)
100M Enameled 8¾" x 3-Ring brass bushed Auto. Loom Bobbins.

SLASHING—WARPING

1—Slasher Unit, including: B. Brg. 16-Beam Creel. 2-S.S. Dble. Dip 72" Size Boxes. 2-S.S. Size Kettles w/Taylor Controls. Andrews & Goodrich 5-Pass Hot Air Dryer. 86" Rolls on Headway. Motors. West. MG Set complete with DC motors, controls, etc. for Range Drive.
1—S-L 3-Can Slasher 60" wide (7', 5', 5').
1—Cocker Dry Slasher 88" Rolls. Take up to 96" Beam. Yr. 1951.
2—Tolhurst 48" Centrifugal Extractors. 7½-HP 440V M.D. (1-S.S. Basket)
1—Cocker Hi-speed Spindle Drive Warper w/Mag. Creel.

BACKWASHER

1—Sargent 3-Bowl 29" Backwasher, 1951.

FINISHING

1—P&W 5-Blade x 66½" Tiger.
1—C&M 6-Belt Cross Brushing Mch.
1—C&M 65" Roll Brusher for Plush.
1—Gessner Full Decater Unit.
1—P&S 12-Pass Tenter Dryer.
2—Phila. Mch. Co. 40' x 12-Pass Tenter Dryers.
2—Textile Fin. Co. 110' x 65" Pin Tenter Frames.
3—Gessner & Voelker 66½" Floor Type Vacuum Extractors w/Nash Hytor Vac. Pumps, motors, etc.
1—Arlington 6-Bowl Washer. w/66" Squeeze Rolls. Bowls 78x48x31. Durant Automatic Guiders. Vac. Tube on Delivery End. Pump. Motors, etc.

WOOLEN MACHINERY

3—C. S. Dodge & Butterworth Am. Std. Rag Pickers.
1—D&F 48" x 12-Bar Mixing Picker.
1—D&F Sample Card on Stand. M.D.
1—D&F 3-cyl. 60x60 Iron Woolen Card. Harwood Mdl. B Hopper Feed. Peralta. D&F 4-bank D. A. Tape Condenser, 96 ends. Mtr. Dr.
1—D&F 3-cyl. Iron Woolen Card to similar specifications except 1st Breaker 60x54" dia. Dble. Fin. 60x60.
500—Lestershire Aluminum Card Spools 47½ x 8.
1—R&L Continuous Cloth Rope Washer, Ser. No. 2053 (shipped Dec. 1949). 4-Bowls Washing, 6-Bowls Reverse Rinse, 1-Bowl Neutralizing. Pumps, Motors, Controls.
1—R&L 84"x18" Set Pneumatic Rubber Cloth Squeeze Rolls, Ser. No. 2051, 7½-HP 220/440 M.D.
1—Arlington 84" Dble. Beater Bronze Ceiling Scutcher. M.D.
1—C&M Dblg. & Tacking Range. 86". M.D.
1—P&W 72x36" Semi-Decater, Ser. 8131.
2—D&F 80" x 14-Roll S. A. Nappers, M.D.
1—D. Gessner 72" x 18-Roll D. A. Napper, M.D.

MISCELLANEOUS

500—Fiber Roving Cans 12x36 w/springs
1—Set Butterworth 27-Dry Cans 142x23.
1,000 or more 4-Wheel Box Trucks, Fibre, Metal, Wood. What size and kind do you want?
1500—Fiber Filling Boxes 19x9¼x19 D.
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APPRAISALS TEXTILE MACHINERY LIQUIDATIONS

78 Fletcher St., Lowell, Mass.

LIQUIDATION SALE

1—set 14 S. S. Dry Cans 60"x23"—$2700.00
1—60'x60" W & J Tenter Frame, S. S. Clips
2—V.V. 60" Hyspeed Tubers
1—V.V. 54" Hyspeed Tuber—$600.00
1—50" 3-Roll Calender—$1600.00
1—set Mt. Hope Guides with adjustable stands—$225.00
12—Spindles (Whitin Schweiter) automatic quilling—$110.00 per spindle
1—Johnson 7 Can Slasher—$1200.00
4—Werner 50" S. S. Jiggs—late model
1—3-Roll 68" Hydraulic 30 Ton Calender —$4500.00
1—Hinnekens Boil-Off—$3500.00
1—10' S. S. Dye Beck—$500.00
1—V. V. 48" Decatizer, L-4 Nash Pump, Motors & Blanket—$1500.00
1—8' S. S. Dye Beck—$400.00
1—60" 2-rubber roll Quetch baloney roll expander
1—Merrow Sewing Machine 60-3D.B., table & motor—$200.00
1—68" Progressive Hyspeed Exam. & Measuring Machine with reverse—$400.00
1—60" Hercules Extractor—$500.00
1—V.V. 50" Scutcher—$500.00
1—Palmer 63" steam jacketed #3 B. B. Reeves—$1500.00
3—Textile Squeeze Sets, 36" wide, 2 rubber rolls 19" and 12" Diam. roller bearings.

A & M BLANK CO., INC.

301-313 East 22nd St. (at 7th Ave.) Paterson, N.J.

SHerwood 2-1367-8

TEXTILE AUXILIARIES

WE SPECIALIZE IN FINISHED MACHINERY

THESE ITEMS IN STOCK FOR IMMEDIATE DELIVERY

1—Morrison—60" B. B. Button Breaker, excellent condition
1—Hydraulic "Print Roll" Jack, for Rolls up to 72" wide
4—72" Butterworth S. S. Lined Dye Jiggs
1—45" Huboid, 80 ton Schreiner Calender all complete with Pump and Accumulator
1—15 ton "Hydraulic" 72" Hunter, B. B. Pad, practically new
10—12" "Rodney Hunt" — TRUE SHADE All Stainless Steel Dye Becks, almost new
Also, Dry Cans of all sizes. Spare Pad Rolls and Calender Rolls, St. St. 150 Gals. heavy gauge mixing tanks.
A.C. & D.C. Motors from ¼ H.P. to 100 H.P. of all types.

Office—146 West River St. Telephones—Dexter 1-9650, 1-8837

PROVIDENCE, R. I.

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(Continued from preceding page)

THROWING QUALITY Control Chemist—Intensive experience in research and development of new sizing formulations for throwster customer requirements. Thorough knowledge in obtaining highest quality work. Specialist in formulating tailor-made treatments for synthetic yarns plus experience and knowledge in their heat treatment problems. PW-5348, Textile World.

DESIGNER AND Mill man, 18 years extensive and diversified experience on knitted and woven woolens from the raw material to the finished product, including liaison between sales and mill. P.T.I. graduate. PW-5491, Textile World.

PLANT SUPT. 15 yrs. executive experience throwing—slashing—warping—weaving—on modern equipment—cotton—viscose—acetate nylon and fibreglass will relocate. PW-5540, Textile World.

PILE FABRICS—weaving supt. 26 years experience in plus & velvet, all type looms, shaft wine & jacquard. PW-5588, Textile World.

BUSINESS OPPORTUNITY

Will license patent for seamless woven bags and various containers. Never offered before. The Wallwork Corporation Johnston Building Charlotte, North Carolina.

My Client, a Well-Known

SPECIALIST IN MENSWEAR FIELD

will market production of wool or worsted mill if quality and size of production meet standards of his long-standing contacts.

Complete data in first letter, please

William D. Cabell, Atty
522 5 Ave N. Y. 36, N. Y.

UNUSUAL OFFERING OF THROWING EQUIPMENT

5—Atwood Monarch D.D. Twisters
½ lb. Package—1 motor—4½" spindle spacing—240 spindles each

13—Atwood Monarch D.D. Twisters
½ lb. package—220 spindles each—2 motors

3—Atwood Monarch D.D. Twisters
1 lb.—180 spindles each

11—U. S. Textile D.D. Twisters
½ lb.—206 spindles each—5" spindle spacing

1—U. S. Textile D.D. Twister
1 lb.—240 spindles—2 motors

16—Model 110 Atwood Twisters
1947 Model—232 spindles each—6" spacing

2—1950 H & W Yarn Conditioning Boxes
Type ST-2. Large sizes.

A Variety of C & K and DRAPER BROAD GOODS AUTOMATIC LOOMS
S-6's—S-5's with S-6 clutches—Draper XD's Slashers—Warpers—Automatic Quilling—Quills—Harness Frames—Drop Wires—Etc. Please send us your inquiries.

NARROW FABRICS

1—10 CAM S.S. FINISHING MACHINE
30" face. Chain driven. Ball bearing. Quetsch drive.

12—STANDARD FLETCHER 15'8" LOOMS
Heavy duty crank shafts. Cam motions. Motorized.

1—SCOTT TESTER
Model Q-3

All items subject to prior sale *WRITE, PHONE OR WIRE FOR FURTHER INFORMATION* This is only a partial listing

Wm. Rabinowitz & Sons
TEXTILE MACHINERY, BOBBINS & SUPPLIES
214 - 222 Hamilton Street Phone HEmlock 3-7497 3-7498 Allentown, Pa.

FOR SALE

72—Draper XD 64" looms 20 harness dobby, 1½ HP, 220 Volt motors, 2½" crank arm throw, center fork, #76 semi-low roll take up. Located Pa.

62—Frames Whitin 1921, 3" gauge tape driven belt drive spinning frames, conventional draft 39" head end, gravity spindle, 240 spindles each, 14,880 total spindles, located Georgia, low price.

10—Model K Whitin 1948—6-head Combers, new condition, push button motor drive, Northern location.

4—4-head M.D. Ribbon Lappers.

4—20 Delivery, M.D. Sliver Lappers.

176—32" Model X2 1949 Draper looms, cams and spring tops, excellent condition. Northern location.

The above equipment offered usual second hand terms.

GEORGE D. FLYNN, JR.
John D. Flynn
Agent
31 Canal Street Providence 3, R. I.
GAspee 1-9423

REBUILT MACHINERY FOR IMMEDIATE DELIVERY

1—Parks & Woolson 72" Decatizer, Nash Pump & Motor
1—V. V. Tenter Frame 60' x 60" S/S Clips
1—W. & J. Tenter Frame 30' x 96"
2—V. V. 3 Roll Silk Calenders M. D.
1—Hercules 48" Self Balancing Extractor open top side mounted Motor
1—V. V. 42" Self Balancing Extractor M. D.
1—Set of 21 Dry Cans 72" x 23"
1—54" Verduin Hydraulic Embosser
1—10 Color V. V. Ribbon Printing Machine
2—Van Vlaanderen Tubers 64"
3—Paterson Tubers 64"
2—Paterson Beamers 60"
1—Measuregraph 60" Variable Speed Tubing & Examining Machine
1—Hermas Measuring & Inspection Machine 58"
2—60 gal. copper Jacketed Kettles, with Agitators M. D.
1—Elliot & Hall Flat Folder 54"
Motors & Drives of Various Sizes

1—60" VERDUIN HYDRAULIC 40 TON CALENDER
6—60" VERDUIN S. S. JIGGS
1—4 COLOR TEXTILE PRINT MACHINE 68"
1—2 COLOR TEXTILE PRINT MACHINE 68"
1—72" PNEUMATIC PADDER, 2 NEW RUBBER ROLLS
1—54" HINNEKENS BOIL-OFF MACHINE

SHerwood 2-7666 SHerwood 2-7667
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BATCHERS, Single Roll 50"-80".
BLOWERS, Wool Stock 16"-20".
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CALENDER 3 roll 44" Mtrzd.
Staple CARD Single Cyl. 60".
WOOL CARDS 3 cyl. 60x48" dia.
Card Clothing Tension unit 60".
CLEANING & COVERING Machines for Spinning Rolls, mtrzd units.
CLOTH CONDITIONER 84" Vertical.
PIN DRAFTERS, Duals-Quads.
WOOL COMBS, 310 M/M width.
CRABB, 2 perforated Cyldrs, 66".
CREELS, All Steel 42 end units.
CREEL Magazine type 504 ends.
DECATURS, Semi 72" dias. up to 60".
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PIN TENTER DRYER 12 pass 66".
DRYER 4 Tier Cloth 78" minimum tension, Pneumatic PADDER 2 roll.
DRYER, RAW STOCK 72" with Feeder.
DUSTERS, Cone Type 6'-10' units.
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FEED Box, Wet Stock 48" width.
FEEDS, Broadband Intermediate 48".
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LOOMS, W3 Model 82" automatic.
LOOMS, W2 Model 82" automatic.
LOOMS, W1 Model 82" automatic.
LOOMS, 92"-110" Automatic.
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NAPPERS, Single Acting 80"-90".
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PICKERS, Mixing 36"-48" units.
ROTARY STEAM PRESSES 66"-72".
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SINGER 3 burner 84" Gas Mixer.
SQUEEZE SETS 18" to 96" wide rolls.
Bobbin STRIPPER L 8-¾" Bobbin.
FW3 SPINNING FRAMES 4-½" Gauge.
F2-Long Draft SPINNING FRAMES.
CLIP TENTER FRAME 20' x 62".
PIN TENTER FRAMES 25' x 78".
TESTER, CLOTH 1200 Lb. Capacity.
WARP-TYING Unit Model K Portable.
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#102 CONE WINDERS 120 Spdles.

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Copland Converting & Finishing Co.,
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(8) Robt Reiner twin knitters, 66 ga 4 sections to each. New Dec. '52. A-1 CONDITION, LITTLE USED Arrangement for operation or purchase. Location, eastern Pennsylvania.

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100 No. 50 Universal Coners—"L" Drive Gears Gainers-Pineapples

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3 ARNOLD RUBBER COVERING MACHINES

12 UNIVERSAL 250B SIZING MACHINES

6 HIGH SPEED S. PP RERAWS SPINDLES

120 C&K S-6 Looms

50 Universal No. 30 Coners & No. 50 Tubers

40M—Aluminum Head Take-up Shafts 3¼T. x 4"H.

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MILLER MACHINERY CO.

66 RAILROAD AVE. PATERSON, N. J.
Tel. Sh 2-5467-8

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KNITTERS — RIBBERS — LOOPERS
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1—Progressive Label or Ball Banding Machine
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36—Universal #50 Winders, King Spool, Cone, Doubler, ⅜" Tube
2—Baines (English) Automatic Thread Spoolers
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2—Obermaier 300# Stainless Steel Package Dyers, Spare Carriers
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TEXTILE MACHINERY
THROUGHOUT THE WORLD!
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50—Copper dry cans, 72" x 23", ball bearing, M G Set.

60—Copper dry cans, 100" x 23", ball bearing, M G Set.

Also other sets dry cans, various sizes.

2—60" padders, 2 and 3 rolls.

9—Rolling and examining machines, 36"—56".

Complete bleachery equipment consisting of double strand acid saturators, "J" boxes, kiers, pilers, washers, etc.

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1—Complete water treatment system.

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1—600 Live Ends Magazine Cone Creel with DX Tensions.

2—512 End Flat Pin Revolving Spool Type Creels, Chromium Dents 5 ft. high.

4—French SAG Combs—30½" x 12" cans, 22 x 23" aprons. For Fine Wools 21 pounds per hour on 64's Wool.

1—Whitin Model J. Quiller, 304 Ends 3½" Gauge, 10½" Traverse.

1—1943 Model (used but little) Gessner 3 cylinders in tandem double acting Nappers. 20—4" dia. O.A. Rolls per cylinder for 84" cloth complete with Reeves Drives, feeding and folding equipment.

4—Morton 600 lb. capacity Stainless Steel Raw Stock Dye Kettles complete with motor, control equipment, etc.

16—Collins 200 spindle Twisters: 3" Rings, 4¼" Pitch, 8" Bobbin Traverse 10" dia. cylinders, 10 HP Motor, etc.

21—Globe Ball Warping Frames.

23—48, 54 & 60" single Cylinder Worsted Cards.

23—Noble Combs with Circles.

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500M	A.L. 8-¾" Bobbins (Cotton, Wool & Wor.)
260M	Drawtex Heddles 15" (Worsted)
500M	Flat Steel Heddles 14"
600	Heddle Frames 80" (Slide Hook)
200Pr	Mossberg Pr. St. Beam Hds. 24"
1M	Seamless Roving Cans, 12½ x 36"
	LOT OF W-3 LOOM PARTS, CK
	Large Lot of Draper Mod. D. Parts
500	Change Gears for W-3 Looms, CK
	ONE MILLION K.A. Drop Wires, .008

J. J. McCaffrey & Son, Inc.

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112—Saco-Lowell, Saco Pettee and H & B 40" Cards
200—deliveries Saco-Lowell Controlled Draft Drawing Frames—1952
16—Saco-Lowell FS2 Roving Frames, 10 x 5, 120 spdls.—1952
76,000—Spdls. Whitin and H & B Spinning Frames
1,100—Spdls. Whitin BB Twisters
6—Abbott Quillers, 130 spdls., w/hoist—1952
1—Barber-Colman Quiller, Model EBW, 30 spdls.—1952
3—Bachman-Uxbridge Gentle Air Slashers—1952

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Cotton & Synthetic Spinning & Weaving Mill—53,000 Spdls., 1700 Looms

REAL ESTATE:
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MACHINERY:
4—H & B Single Process Pickers, 40" wide—1946.
28—H &B Cotton Cards—40" wide, 26" doffer.
6—H & B Hi-Draft Slubbers, 10 x 5, 104 spdls.—1940.
56,000—Spdls. L.D. & Super Draft Spin. Frames.
2—Barber-Colman Hi-Speed Warpers, 54¼", w/creels.
1—Barber-Colman Spooler, 306 spdls., Type C.—1948.
1—Abbott Quiller, 120 spdls., w/hoist—1951.
48—Draper XD Loom, 54" reed, dobby, Diehl drive 1951.
190—Draper XD Looms, 54" reed, dobby, motor—1947, 8.
96—Draper XD Looms, 54" reed, dobby, motor—1942.
384—Crompton & Knowles C6 Looms, 4 x 1 box, 52" reed, motor—1941.
42—Crompton & Knowles C6 Looms, 4 x 1 box, 56" reed, motor—1941.
68—Crompton & Knowles C6 Looms, 4 x 1 box, 60" reed, motor—1946.
4—Saco-Lowell Slasher, 2 cyl., 57" Brown controls.
12—Curtis & Marble Clip Spot Shearers, 57½" wide.

A. D. JUILLIARD & Co., Woolen Division STOTTVILLE, NEW YORK

48—Crompton & Knowles W3 Looms, 82" reed, motor.
1—Riggs Lombard Enclosed Dye Kettle, 4' wide,—1947.
1—Economy Bale Press, Manual, blanket size.

IN STORAGE

1—Werner Tenter Frame, 50' long x 60" wide, enclosed gearing.
1—Nat'l. Loop Dryer, Model E, 60' long, 16 fans—1948.
24—Copper Dry Cans, 60" wide, and 12 cans, 50" wide.
1—Werner Pneumatic Padder 50" wide, 1947.
1—VanVlaanderen Pneu. Embossing Calender, 54"—1950.

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2—#44 Winders 120 sp., bakelite rolls
28—H&B Cards, 37" & pickers to match
2—Frames Whitin Interdraft, 9 x 4½", 1949
500—New Jack Spools, 10" x 36"
3—#34 S/L Air Filters
2—H&B Twisters, 5½" g. 4½" ring
2—Roving Bobbin Strippers
40—Section Beams, Allen, NYLON, 28" x 54¼"
60—Section Beams B/C, Allen, 28 x 54½"
1—Van Vlaanderen 7-can slasher 24" beams
4,000—10" x 36" Roving Cans
10—Bahnson Humidifiers H—550V & we have controls
4—Cone Creels, Cotton type-400 ends each
40—Saco & Pettee Cards 40"
3,000—Used Motors, 220-440-550V
3—LL B/C Knotting Machines—cheap

LOOMS & PARTS

100—Loom Beams 45½" x 22" head
100—Loom Beams 44" x 24" heads
20,000,000 Drop wires, all types
300 Dobbies—16, 20, 25 harness
10,000,000 Heddles, all styles & sizes
1,500—Stafford Thread Cutters, complete
28—W3 1936—82" B/S 4 x 1
60—S5 1943—56" b/s S-6 clutch
200—XK 44" cloth ½ dobby ½ plain
48—XD 46" cloth dobbys
200—C6 4 x 1 48", 50", 60" cloth
350—S3 4 x 1, 2 x 1, 48", 50" cloth

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Index to ADVERTISERS Keyed by PRODUCT

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HOW TO USE. First, look in the table below and find the letter that designates the class of supply or service in which you are currently interested. Then consult in the index the page numbers that are followed by that letter.

A. Air Conditioning, Air Cleaning.
B. Building Construction and Maintenance, Paints, Yard Equipment, Water Supply
C. Chemicals and Dyestuffs
D. Cleaning Equipment
E. Dyeing, Finishing, and Cloth Room Equipment and Supplies
F. Electrical Equipment—Motors, Controls, Lighting, Etc.
G. Fibers, Yarns, Mills, Finishing Companies
H. Fluid Handling—Compressors, Pumps, Piping, Valves, Fittings
K. Instruments: Measuring, Metering, and Weighing Apparatus
L. Knitting-Mill Equipment and Supplies
M. Lubricants and Lubrication Equipment
N. Management Services—Factors, Consulting Engineers, Insurance, Personnel Facilities, Plant Sites, Etc.
O. Materials and components for Machinery and Equipment
P. Materials Handling, Packaging, and Shipping Facilities
Q. Power Generation and Transmission (see also Electrical Equipment)
R. Weaving and Warp Preparation Equipment and Supplies
T. Yarn-Production, Twisting and Winding Equipment and Supplies

This index is published as a convenience to the reader. Great care is taken to make it accurate, but Textile World assumes no responsibility for errors or omissions.

Acme Steel Co.	62	P
Allen Mfg. Co.	234	O
Allis-Chalmers Mfg. Co.	20-21	F, Q
American Air Filter Co., Inc.	70	A
American Aniline Products Inc.	49	C
American Crayon Company	259	E, I, R
American Lava Corp.	159	I, RT
American Monorail Co.	76	P
American Mutual Liability Insurance Co.	9	N
American Pulley Co.	61	Q
American Steel & Wire Div.	233	O
Antara Chemical Div., General Aniline & Film Corp.	59	C
Appleton Machine Co.	227	E
Armstrong Cork Co. (Cots)	28-29	T
Armstrong Cork Co. (Roll Covering)	207	T
Askania Regulator Co.	190	E, K
Atlantic Rayon Corp.	228	G
Atlas Electric Devices Co.	42	K
Bahnson Co.	44	A
Barber-Colman Co., Textile Div.	253	R
Bemis Bro. Bag Co.	216	P
Benjamin Electric Mfg. Co.	192	F
Brainard Steel Div. Sharon Steel Corp.	25	P
Bullard Clark Co., The E. H. Jacobs Northern Div.	186	R
Butterworth & Sons Co., H. W.	150	E
Caldwell Co., W. E.	261	B, E
Carter, Inc., A. B.	223	T
Celanese Corp. of America Chemical Div.	40	C
Celanese Corp. of America Yarn Div.	72	G

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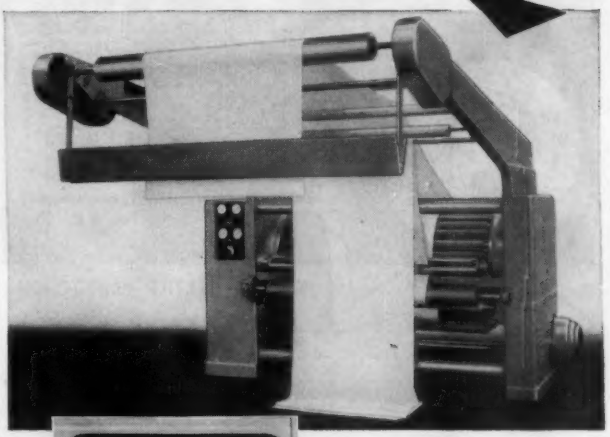

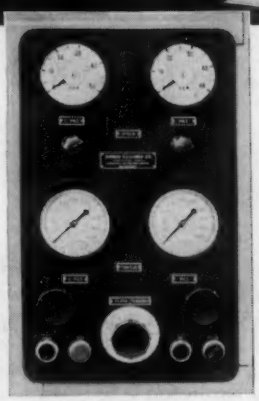

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Clark Equipment Co. Industrial Truck Div.	23	P
Cole Mfg. Co., R. D.	216	B E
Colgate-Palmolive Co.	24	C
Collins Bros. Machine Co.	224	T
Colonial Rubber Co.	260	E
Columbia-Geneva Steel Div.	233	O
Columbia-Southern Chem. Corp.	47	C
Cone Mills Corp.	203	G
Corn Products Refining Co.	60	C
Courtaulds Inc.	231	G
Crane Co.	74	H
Crompton & Knowles Loom Works	13	R
Crompton-Richmond Co., Inc.	251	N
Crucible Steel Co.	39	O
Custom Scientific Instruments Inc.	258	K
Cutler-Hammer, Inc.	71	F
Darnell Corp., Ltd.	244	P
Dary Ring Traveler Co.	230	T
Dayton Rubber Co., The Textile Div.	54-55	BT
Deutscher Spinnereimaschinenbau, Ingolstadt	261	T
Diehl Mfg. Co.	37	F Q
Dinsmore Mfg. Co.	261	E
Dobeckmun Co., The	199	G
Dolge Co., C. B.	226	B
Dommerich & Co., Inc., L. F.	159	N
Dow Chemical Co.	181	C
Draper Corporation	1, 163	R
Drew & Co., E. F.	167	C
duPont de Nemours & Co., E. I. Electrochemical Dept.	245	C
Engineered Plastics Inc.	202	T
Fiske Bros. Refining Co., Lubriplate Div.	232	M
Foster Machine Co.	58	T
Gaston County Dyeing Mach. Co.	208	E
Gates Rubber Co.	18	Q
General Chemical Div., Allied Chem. & Dye Corp.	205	C
General Electric Co.	32-33	F
General Tire & Rubber Co. Industrial Prods. Div.	217	L BT
Gessmer Co., David	269	E
Goodrich Chemical Co., B. F.	22	C
Graphite Metallizing Corp.	236	O Q
Guider Specialty Co.	238	E
Haertel Co., Walter	240	P
Haskell-Dawes Machine Co., Inc.	226	T
Herr Mfg. Co.	237	T
Heyden Chem. Corp.	209	C
Hinde & Dauch	41	P
Howard Bros. Mfg. Co.	52	T
Hunt Machine Co., Rodney	53	E
Huyck & Sons, F. C. Noone Industrial Fabrics Div.	256	E
Hyatt Bearings Div., General Motors Corp.	193	O Q
Ideal Machine Shops, Inc.	46	T
Industrial Rayon Corp.	14-15, 161	G
Industrie-Werke-Karlsruhe	259	E
Ives Co., L. T.	211	L
Jacobs Northern Div., E. H. Bullard Clark Co., The	186	R
Jiffy Textile Marker Co.	254	E L R
Johns-Manville	221	O
Johnson Corp., The	257	H
Keever Starch Co.	185	C
Kennett Equip. & Mach. Co.	222	P
Klauder-Weldon-Giles Mach. Co.	8	E
Kuljian Corp., The	256	N
Lane & Bros. Inc., W. T.	272	P
Link-Belt Co.	7	Q
Lockwood Greene Engineers, Inc.	56	N

Loper Co., Ralph E.	260	N
Lubriplate Div., Fiske Bros. Refining Co.	232	M
Main & Sons, Inc., Robt. A.	258	T
MAK Maschinenbau Kiel	50	T
Manhattan Rubber Div.	38	Q
Marquette Metal Prods. Co.	171	T
Marshall & Williams Corp.	257	E
Mathieson Chemicals Olin Mathieson Chem. Corp.	2	C
M-B Products	217	T
McBride, E. J.	6	R
McCreary Mach. Works, Inc.	156	E
Meese, Inc.	270	P
Milton Machine Wks., Inc.	262	R
Minneapolis-Honeywell Reg. Co. Industrial Div.	214-215	K
Monsanto Chemical Co. Inorganic Chemical Div.	201	C
Plastic Div.	45	C
Mount Hope Machinery Co.	255	E
Nash Co., J. M.	210	RT
National Ring Traveler Co.	36	T
National Tube Div.	233	H O
Naugatuck Chemical Div. U. S. Rubber Co.	197	C
New England Bobbin & Shuttle Co.	271	R
Nitrogen Div., Allied Chem. & Dye Corp.	69	C
Noone Ind. Fabrics Div. of F. C. Huyck & Sons	256	E RT
Nopco Chemical Co.	27	C
Oakite Products, Inc.	257	C
Oilgear Co., The	73	H Q
Olin Mathieson Chem. Corp. Industrial Chemicals Div.	2	C
Onyx Oil & Chem. Co.	78-79	C
Ordnance Gauge Mach. Co.	210	L
Pabst Brewing Co.	248	C
Page Fence Association	220	B
Parks-Cramer Co.	63	A D
Perfecting Service Co.	220	H
Pfister Chem. Works Inc.	17	C
Pittsburgh Corning Corp.	235	B
Portland Co., The	262	E L RT
Powell Co., Wm.	12	H
Powell Valves	12	H
Proctor & Schwartz Inc.	66	E R
Pyrene-C-O-Two	225	B
Raybestos-Manhattan, Inc., Manhattan Rubber Div.	38	Q
Red-Ray Mfg. Co., Inc.	254	E
Reeves Pulley Co.	198	Q
Refined Products Co.	2nd Cover	C
Reiner, Inc., Robert	183	R
Reliance Elec. & Eng'g. Co.	34-35	F Q
Robbins & Myers, Inc.	179	H
Roberts Company	77	T
Rohm & Haas Co.	43	C
Rollway Bearings Co., Inc.	247	O Q
Rome Soap Mfg. Co.	261	C
Rumford Chemical Works	239	C
Ryerson & Son Inc., J. T.	212	O
Saco-Lowell Shops	26, 154	T
Sargent's Sons Corp., C. G.	241	E
Scherr Co., Inc., George	260	K
Schlafhorst & Co., W.	11	RT
Schlumberger & Cie.	251	T
Servospeed Div. of Electro Devices, Inc.	196	E K
Shore Instrument & Mfg. Co., Inc.	256	K
Signode Steel Strapping Co.	189	P
Simco Co.	258	E L RT
Sirrine Co., J. E.	3rd Cover	N
Smith, Drum & Co.	172	E
Solvay Process Div., Allied Chem. & Dye Corp.	57	C
Sonoco Products Co.	19	T
Southern Shuttles Div., Steel Heddle Mfg. Co.	191	R
Spaulding Fibre Co., Inc.	177	P T
Square D Co.	165	F

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with NEW LONG-LIFE FINISH
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Standard Pressed Steel Co.	259	O
Steelcote Mfg. Co.	252	B
Steel Heddle Mfg. Co.	191	R
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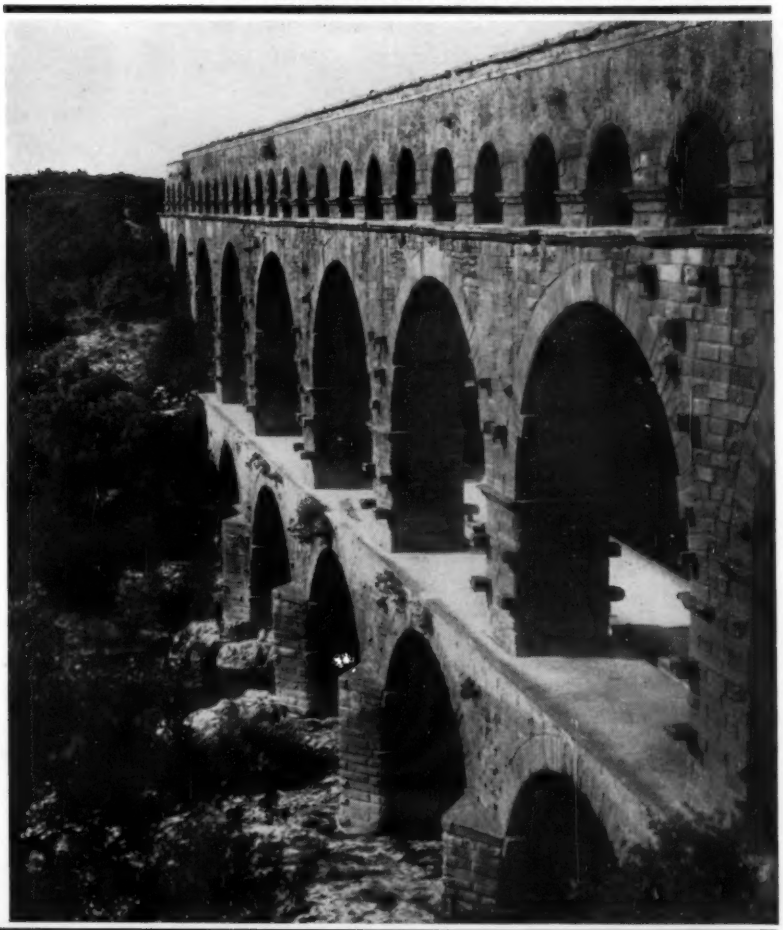

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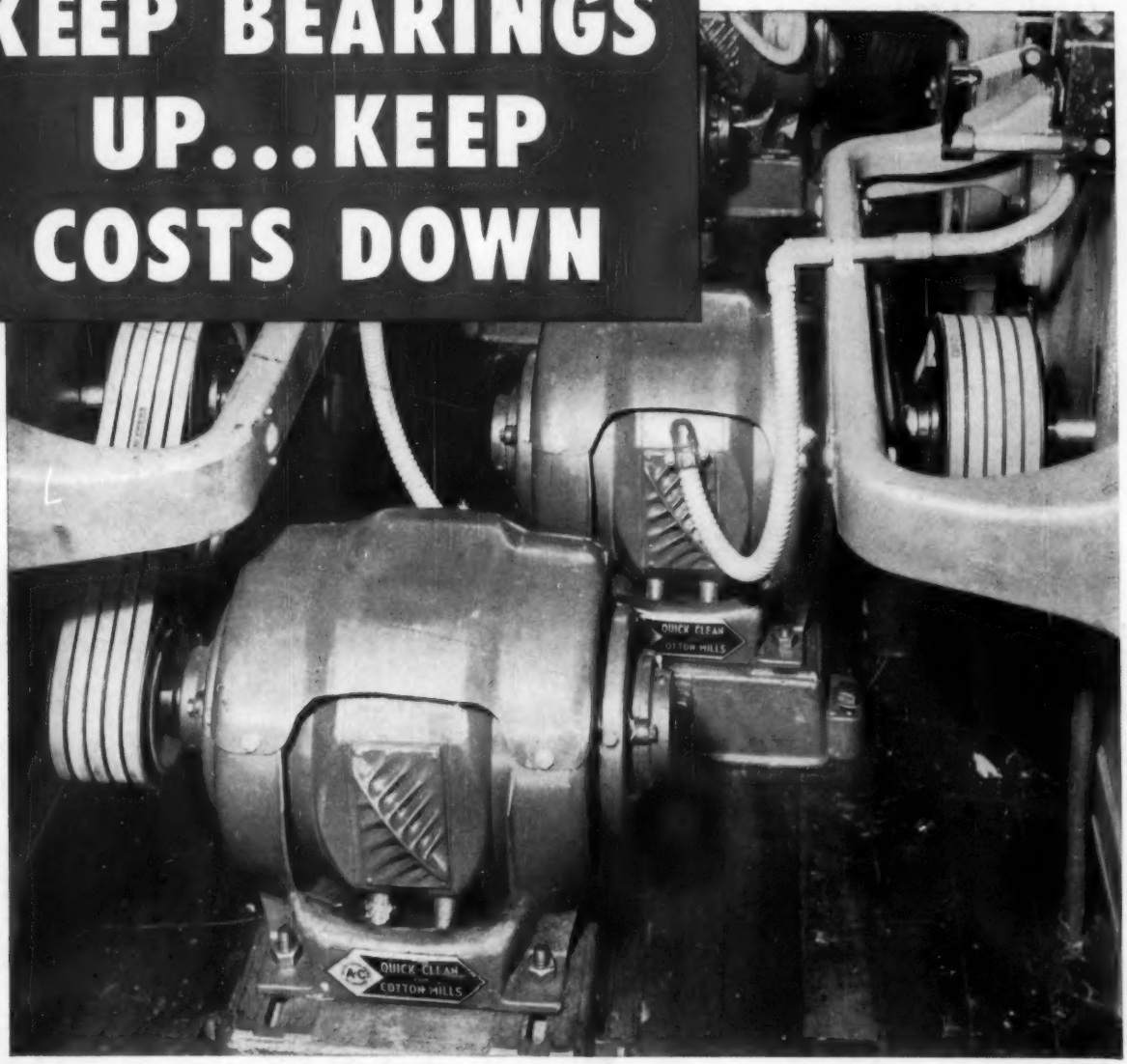

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